



## VIRTUAL FIREWALLS

Do You  
Need One?

## IT ASSET MANAGEMENT

You Can't Afford  
To Overlook It

## NETWORK SIZE ISSUES?

Expand Your  
Infrastructure

TECHNOLOGY FOR BUSINESS

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SUPERMICR<sup>®</sup>

# MicroCloud Solutions



✓ Save Power | ✓ Simplify Service | ✓ Reduce TCO

## ON THE COVER

### SUPERMICRO® MicroCloud Solutions

Hardly a static environment, today's data center battles two main problems: not enough space and/or capacity to accommodate a growing influx of data, and not enough processing power and/or bandwidth to handle increasingly demanding applications. The MicroCloud solutions from Supermicro® tackle these problems affordably without sacrificing the strong enterprise performance you expect from your IT hardware. Turn to the Essential Business Tech department for details.



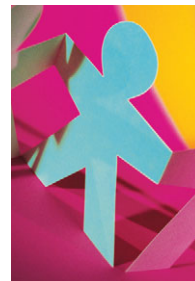
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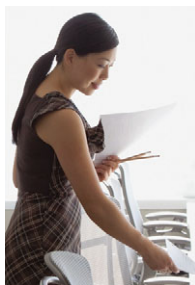
Highly useful  
information  
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► *Business  
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## When it comes to grooming a successor, Robert Half Technology offers the following tips:

### STUDY: CIOs LACK SUCCESSION PLAN

► What would happen if your own job had to be filled suddenly? Do you have a plan in place? About 80% of CIOs (chief information officers) haven't identified a successor, according to a study by Robert Half Technology. The study interviewed more than 1,400 CIOs in U.S. companies with 100 or more employees. "By taking proactive steps to identify and develop future leaders, a manager's departure is a workable issue instead of an imminent crisis," says John Reed, senior executive director at Robert Half Technology.

"By taking proactive steps to identify and develop future leaders, a manager's departure is a workable issue instead of an imminent crisis."

**John Reed**

senior executive director at  
Robert Half Technology

**1 Start early.** Preparing someone for a leadership role can take time. Starting early helps create a safety net should you face an unforeseen absence or extended leave.

**2 Keep an open mind.** Look for candidates who best display the needed skills to take on the role, regardless of their current title.

**3 Share the vision.** Be sure to include your prospective successors in strategy discussions. That way they'll better develop planning and leadership skills while getting a broad vision of the company and its goals.

**4 Make it ongoing.** Help your protégés progress and meet expectations by providing regular feedback.

**5 Take a trial run.** Use a vacation or other time off to let a potential successor assume some of your responsibilities. This will give the employee a chance to gain experience, and you'll be able to see how prepared the employee is.

### GROWTH EXPECTED IN LOCATION-BASED SERVICES

► Based on recent industry figures and trends, ABI Research foresees significant growth in the LBS (location-based services) market in the coming five years. ABI says growth will occur mainly in North America and Europe as a continuation of strong interest in LBS, which links mobile users to information and advertising based on their current device location. Growth is also expected in Brazil, China, India, and Russia, where ABI has noted the increasing presence of LBS startups. "There is heavy investment, strong local and international competition, and most importantly, an appetite for these applications," says Patrick Connolly, ABI Research senior analyst. The research firm expects LBS revenues will exceed \$6 billion by 2017.

### SEMICONDUCTOR REVENUES DECLINED IN Q3 2012

► Citing economic concerns as a cause and sagging PC sales as a side effect, research firm Gartner's report on the semiconductor market indicated a 3% year-to-year decline in Q3 2012. Revenues reached \$307 billion in Q3 2011 and \$298 billion in Q3 2012. Steve Ohr, a Gartner research director, says, "Uncertainty about the state of the macroeconomy, coupled with ongoing inventory overhang, sent ripples through the semiconductor industry." Gartner had expected semiconductor revenues would rise a little in 2H 2012, "paving the way for a recovery phase in 2013," but this increase did not materialize.

### CLOUD COMPUTING TO INFLUENCE SECURITY OFFERINGS

► According to Gartner's December 2012 report on cloud computing, an uptake in cloud computing adoption among businesses will influence security vendors in 2013. Gartner says that by 2015, 10% of enterprise security functions will reach organizations through the cloud, because security vendors will modify their offerings to match increased expectations for cloud-based solutions. And as more corporate networks are virtualized, there will be a similar transition, Gartner says, to vendors offering VPN and firewall functions in the form of virtual switches as opposed to physical appliances.

### SECURITY BUDGETS WILL BE STRONG IN 2013

➤ 2012 was a good year for enterprise security, with about 45% of companies increasing their security budgets compared to 2011, according to a recent study by TheInfoPro. And 2013 could be just as good, with 47% of respondents saying they expect their security budgets to increase and just 8% expecting a decrease. Top security-related projects include mobile device management, data leak prevention, and application-aware firewalls, according to TheInfoPro. The study is based on interviews with 200 security professionals at midsized and larger organizations in North America and Europe.

... 45% of companies increasing  
their security budgets ...

### “SOFT” SERVER MARKET MEANS REVENUES DECLINE

➤ After a strong server refresh cycle in 2010 and most of 2011, year-over-year revenue from sales of servers was down 4% worldwide during the third quarter. This marks the fourth consecutive quarter of revenue declines. IDC group vice president Matt Eastwood cites a number of issues for the continued decline, including technology transitions and poor macro-economic conditions in many areas of the world. Eastwood notes that every geographic region except the Asia-Pacific had a decline in revenue from server sales. Server unit shipments were up slightly during the third quarter; server shipments have been up 11 of the past 12 quarters. Microsoft Windows servers represent 51.1% of the market, Linux takes 21.5%, and Unix accounts for 17.3%.

### NUMBER, COST OF CYBER ATTACKS SHOW SHARP INCREASE

➤ The number of cyber attacks has more than doubled in the past three years, and the financial impact of those attacks has gone up by about 40%. Those were among the figures released in the third annual “Cost Of Cyber Crime Study” conducted by Ponemon Institute. This year, the average cost of cybercrime was \$8.9 million—up 6% from last year and 38% from 2010. On average, enterprises face about 102 successful cyber attacks each week, up from 72 attacks per week in 2011 and 50 attacks per week in 2010. Malicious code, denial of service, stolen or hijacked devices, and insider attacks are the most costly cybercrimes, according to the study.

### HIRING MANAGERS PREFER MATURE WORKERS

➤ Hiring managers are three times more likely to hire a mature worker as they are to hire a Millennial, according to a recent survey conducted by Adecco Staffing. Mature workers are viewed as being reliable and professional, according to the hiring professionals surveyed, while Millennial workers are typically more creative and stronger networkers.

### Other key findings:

72% of hiring managers believe that mature workers need more technological know-how.

60% say that Millennials often show a lack of interest in a job during the interview process by not asking questions about the company or position.

46% are concerned about Millennial workers' lack of long-term commitment to a company.

39% believe mature workers will have difficulty learning or adapting to new technologies.

33% say mature workers might be resistant to taking direction from a younger manager.



## CLOUD SERVICES TO BECOME "EVERYDAY" SOURCING OPTION

► When it comes to cloud services, there's a changing mindset among CIOs and line of business managers, IDC reports. Changes in cloud services and better user understanding of the benefits mean hosted private cloud will become the enterprise preference for cloud deployments by 2015, says Chris Morris, a lead analyst for IDC. Cost and security are two major factors contributing to the shift. By 2015, IDC reports, cloud will be just another common delivery model within new commercial terms for supply of business and IT services, forming the basis of what IDC has coined the "Outsourcing 3.0" period.

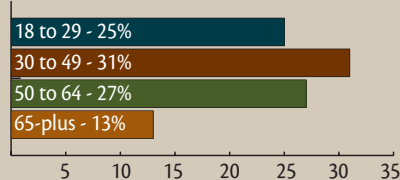
## NEW TECHNOLOGY AIMS TO BOOST WI-FI PERFORMANCE

► When wireless access points have a large number of users, such as in coffee shops, convention centers, and schools, performance typically takes a hit. But three researchers from North Carolina State University have developed a protocol they say can better manage high traffic loads and boost throughput perhaps by as much as 700% when compared to routers that don't use the new protocol. Dubbed WiFox, the protocol monitors the amount of traffic on the access point. When it detects congestion, WiFox gives the access point priority over other devices until the congestion clears. The protocol can easily be installed on existing routers.

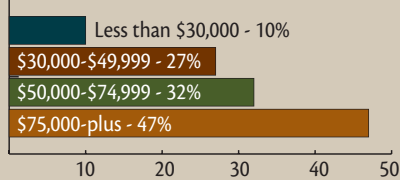
## One Quarter Of American Adults Own Tablet Computers

► New research from Pew Research Center's Internet & American Life Project shows that fully one quarter of adults in the U.S. own a tablet computer. The survey found minimal differences in ownership based on gender and race, but significant differences when it came to age, household income, and education level, as this chart shows.

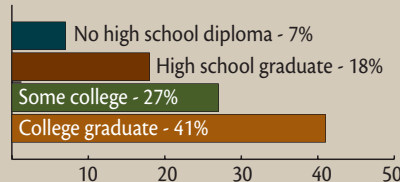
Tablet Ownership By Age



Tablet Ownership By Annual Household Income



Tablet Ownership By Education Level



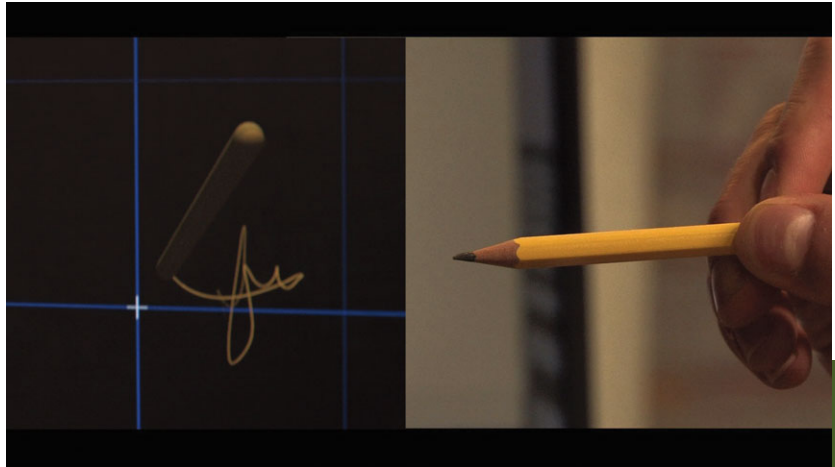
## BUSINESS MOVE TOWARD MOBILITY NOT LIKELY TO SLOW

► Anticipating that 40% of the workforce will be mobile in 2016, research firm Gartner asserted in a recent press release that the "consumerization trend has hit IT as an unstoppable force, as 821 million smart devices (smartphones and tablets) will be purchased worldwide in 2012 and pass the billion mark in 2013." Businesses, which in the past have been relatively cautious on the whole when contemplating new technologies, have begun to more quickly adopt mobile devices and technologies over the past couple of years. Gartner cites the iPhone as an example of this, stating that just one year ago businesses largely resisted Apple devices but are now accepting them. According to Gartner, business uptake of Android smartphones will increase from 34% in 2012 to 56% in 2016, and by 2016 Windows 8 will take third place in business-market tablet sales to Apple and Android.



### LEAP MOTION RAISES \$30M, ANNOUNCES ASUS DEAL

► San Francisco-based Leap Motion announced it has raised \$30 million in Series B funding, all from existing investors. Leap Motion is a leading developer of gesture recognition technology, which lets users interact with devices solely through movement. Some analysts have heralded gesture control as the next major advance in user-device interaction technology. ABI Research, for example, forecast in July 2012 that 600 million smartphones will include vision-based gesture recognition technology in 2017. In addition to the new funding, Leap Motion also announced an OEM partnership deal with computer manufacturer Asus, which will include Leap Motion's technology in upcoming devices.



Leap Motion brings gesture-based control to computers, including future Asus devices.

### MICROSOFT ACQUIRES STARTUP R2 STUDIOS

► Redmond, Wash.-based Microsoft is further advancing its home entertainment and automation efforts with the acquisition of the Silicon Valley-based id8 Group R2 Studios, which Apple and Google had reportedly been interested in acquiring, as well. Microsoft has not discussed financial specifics or future plans related to the deal, but the buyout is likely to bolster Microsoft's Xbox business. R2 Studios is best known for its app that transforms Android mobile devices into touchscreen controllers for A/V systems, thermostats, and

services, has raised \$1.5 million in Series A funding from Trailblazer Capital. Vobi's cloud service enables customers to collaborate on projects and specific files based on their cell phone numbers. Customers use their own devices for Vobi workspaces, with project files kept in sync so that all team members are always on the same page.

### JUMPSTART VEGAS TO PROMOTE TECH STARTUPS

► The 6,000-member Las Vegas Metro Chamber of Commerce (which recently added "Metro" to its name) launched the new JumpStart Vegas initiative to help tech startups in the area thrive. Vegas Inc. reported that James A. "Jay" Barrett, Jr., the chamber's newly appointed chairman, says the growing Las Vegas tech startup community is "not a fad" and hopes the JumpStart Vegas initiative will ensure that startups find a permanent home and support system in the area. The initiative is designed to work as a networking and mentoring system that will connect

entrepreneurs with chamber members, lawyers, and accountants.

### SDN STARTUPS TO WATCH

► A recent report from IDC focuses on SDN (software-defined networking), which the research firm calls "a rapidly emerging set of scalable, flexible technologies that have networking vendors, cloud service providers, enterprise IT, and industry pundits all sitting up and taking notice." Essentially, SDN provides network administrators greater hands-on control over network features and traffic. "Providing better alignment with the underlying applications, this programmability allows for greater levels of flexibility, innovation, and control in the network," says Rohit Mehra, VP of network infrastructure at IDC. In its report, IDC identified five SDN-related startups to watch: Big Switch Networks (promoter of an Open SDN platform), Embrane (distributed software platform provider), Midokura (network virtualization developer), Plexxi (affinity-driven networking solution provider), and Vello Systems (proprietary OS Data Center Gateway provider).



# Microsoft

other electronics. The company has reportedly been working on streaming media applications.

### ONLINE COLLABORATION COMPANY VOBİ RAISES \$1.5M

► Vobi, an Austin, Texas-based developer of Web-based collaboration

# 1&1 WEB HOSTING



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# Same Space, Evolving Demands

## Supermicro® MicroCloud Solutions Help IT

TODAY'S DATA CENTERS battle two main problems: lack of space and/or capacity to accommodate a steadily growing influx of data, and not enough processing power and/or bandwidth to handle increasingly demanding applications. MicroCloud SuperServer® solutions from Supermicro® ([www.supermicro.com](http://www.supermicro.com)) tackle these problems affordably without sacrificing the strong enterprise performance you expect from your IT hardware.

With 12 or 8 server nodes per system, MicroCloud systems provide high density in a small amount of space, thereby addressing capacity concerns. To meet application demands in a variety of environments, the systems use Intel® Xeon® processors and high-efficiency redundant power supplies. "Supermicro MicroCloud systems are the best solution to achieve the highest levels of efficiency and density in cloud computing, data centers, Web hosting, and virtualization environments," says Charles Liang, Supermicro CEO.

### MORE EFFICIENT FOR IT

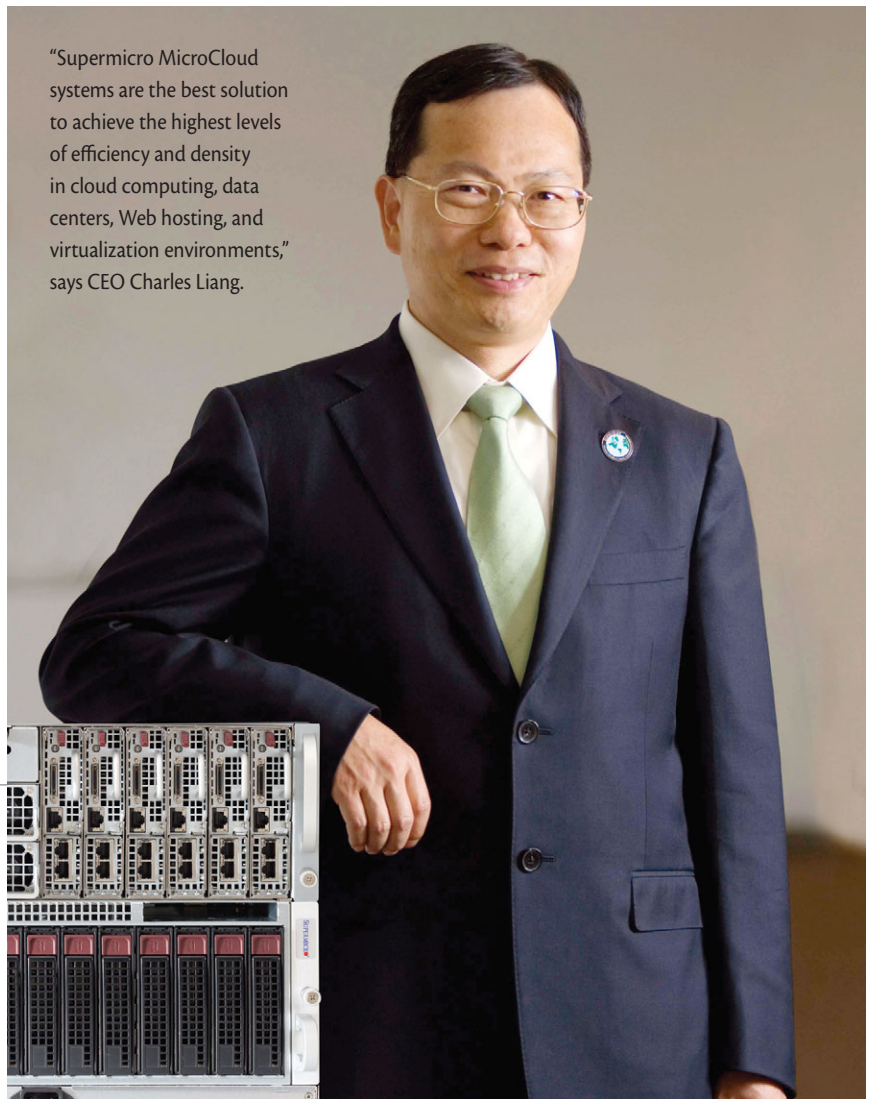
Each cable-free, hot-pluggable server node within a MicroCloud

system operates independently. This means that if one node goes down, the other nodes will not be affected. Supermicro designed the system to provide easy access to each node, so servicing of the system is easy, resulting in greater efficiency for IT personnel. "Data center managers appreciate the hot-swappable HDDs and high density

providing the best performance per rack," says Liang.

The entire system is integrated into a single compact 3U chassis, which saves more than 60% of rack space compared to standard 1U server offerings. "The 12-node MicroCloud systems also feature the newest BBP [Battery Backup Power] technology," adds Liang, "which offers the best data

"Supermicro MicroCloud systems are the best solution to achieve the highest levels of efficiency and density in cloud computing, data centers, Web hosting, and virtualization environments," says CEO Charles Liang.



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center power efficiency and helps to eliminate bulky and expensive UPS equipment.”

### FLEXIBLE & FUTURE-READY

Each node accommodates two 3.5-inch or four 2.5-inch SATA hard disk drives. For companies seeking to expand network connectivity, the system supports the addition of optional two-port microLP Ethernet adapters.

“The MicroCloud 8-node system supports PCI-E expansion, which can help cloud computing customers to create up to eight independent cloud configurations with a single system,” says Liang. “MicroCloud systems also have two Gb LAN ports and a dedicated management port as standard features, making it an ideal platform for Web 2.0 and cloud computing applications.”

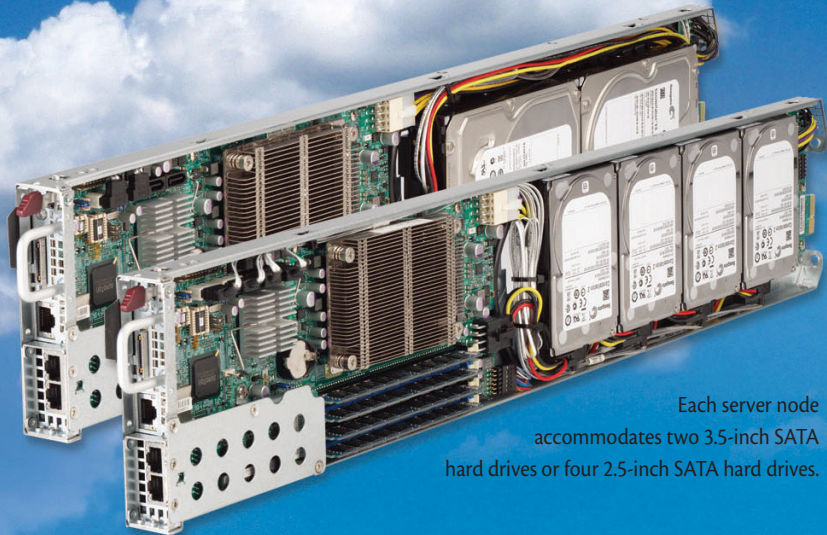
### TOP PERFORMANCE

MicroCloud systems support Intel® Xeon® Processor E5-2600 product family or Intel® Xeon® Processor E3-1200 V2 product family. The E3-1200 processors, ideal for small businesses, simultaneously reduce energy consumption and deliver faster response times for applications. The E5-2600 processors, optimized for as much as 80% higher performance than previous processors, are geared toward IT organizations that employ virtualized data centers or cloud computing. Both processor families offer encryption.

MicroCloud systems also include Redundant 1620W Platinum Level (94%) high-efficiency power supplies and sophisticated cooling zone controls for a Green energy profile. Contact Supermicro for more information about integrating MicroCloud systems into your organization. ●



The Supermicro® MicroCloud 12-server node model is shown here.



Each server node accommodates two 3.5-inch SATA hard drives or four 2.5-inch SATA hard drives.



The MicroCloud system utilizes Redundant 1620W Platinum Level (94%) high-efficiency power supplies and sophisticated cooling zone controls for a Green energy profile.



# What Is CEBP?

## Integrate Communications Applications To Improve Productivity & Efficiency

CEBP (communication-enabled business process) aims to bring together email, phones, instant messaging, social networking, and any other form of communication on the same network. In essence, CEBP integrates your communication infrastructure with your business processes in a way that improves efficiency and lessens the effects of human latency.

"CEBP reduces the delays inherent when a business problem or opportunity requires human intervention," says Art Schoeller, principal analyst at Forrester Research ([www.forrester.com](http://www.forrester.com)). "When you connect the business event to a communications system that is aware of the availability of key people, you can improve the speed and effectiveness of the processes related to that event."

The possibilities and potential for CEBP are essentially endless, depending on how you decide to use it

for your specific business purposes. But CEBP isn't a one-size-fits-all approach. In fact, there are multiple versions of the technology that have varying feature-sets and different use cases. So, before you decide to adopt a CEBP solution, make sure you choose the setup that is right for your company and employees.

### FIVE LEVELS OF CEBP

According to Info-Tech Research Group ([www.infotech.com](http://www.infotech.com)), a CEBP deployment has five distinct levels. The idea is to start at level one and move up to subsequent levels as your CEBP needs change. James McCloskey, senior research analyst with Info-Tech, says the first level of CEBP only requires that companies have a converged network where IP telephony, QoS (quality of service), and maybe some video conferencing are on the same network. Many companies already have this type of network in

place. To reach the second level of CEBP, you simply enhance the toolset you already have in place by bringing in more applications and placing them on that same converged network. For instance, McCloskey says, you may add "desktop voice, instant messaging, video- and Web conferencing, desktop chat, and other disparate pieces of IP communications technology that all ride on the same network."

The third level is where you'll begin to use these separate applications together to speed up the communication process and improve overall productivity, which is where UC (unified communications) come into play. The goal is to provide consistent presence information across multiple endpoints, including desktops, laptops, tablets, and smartphones. "You get to this idea of unified interface where people are using these tools in a consistent way throughout the organization and

they know they can rely on it," says McCloskey. You can check someone's status and feel confident knowing whether he is available.

It is at this third level that companies will see improvements in business efficiency because "instead of picking up the phone and leaving messages, you're able to contact individuals via their preferred method at a given moment," McCloskey says. He adds that this is also the level at which "most organizations can get a pretty significant benefit" from implementing CEBP; moving on to a higher level may not be necessary depending on your company needs.

Level four introduces full integration of UC toolsets into a company's "productivity applications, business apps, customer service, and contact center," says McCloskey. This is the stage where you can be working on a Word document or spreadsheet, realize you need clarification on a certain fact or figure, and then contact someone "immediately, without leaving Excel," he explains.

In a similar fashion, this level can improve a company's overall customer service. For instance, if a representative is on the phone with a customer, he can view his colleague's status regardless of where she is currently located or what device she is using. "If you look at enterprise content management systems or process workflows, that's where being able to reach out and find the available subject matter expert reduces the cycle time or lag associated with asynchronous communication," says McCloskey.

The fifth level is unique in that you are "fully optimizing some of your business workflows using communication tools," says McCloskey. To explain further, he uses an example of a manufacturing company and its production floor. In the past companies had to create their own alert systems, but through the use of CEBP, they can now set up automatic alerts. The CEBP system can use the UC infrastructure



"When you connect the business event to a communications system that is aware of the availability of key people, you can improve the speed and effectiveness of the processes related to that event."

**Art Schoeller**

principal analyst, Forrester Research



"[When you leave your desk and attend] a meeting, it's synced up already with the network. You can take some notes and those notes will go to all the same places as if you were at your desk."

**Bern Elliot**

vice president and distinguished analyst, Gartner

to pinpoint the exact person to contact. At that point, McCloskey explains, you can set up a "dynamic collaboration space, so you can get people to join in and effectively collaborate on whatever the problem is."

### EXAMPLES OF POTENTIAL CEBP USE CASES

As you determine which stage of CEBP is the best fit for your specific needs, you should consider potential use cases for CEBP in your organization. In addition to McCloskey's manufacturing floor example, there are many other potential uses, as well. For instance, a popular fitness franchise with 370 clubs throughout the U.S. uses CEBP to locate managers when administrator-only changes need to be made at certain facilities, according to Bern Elliot, vice president and distinguished analyst at Gartner ([www.gartner.com](http://www.gartner.com)). The application uses the activated GPS on a manager's phone to pinpoint his exact location and determine whether that individual is the best person to address the issue.

This franchise also uses CEBP to schedule replacements in case of trainer illness or unavailability. "This scheduling application notices that it's

within a certain time of a class and a substitute is needed because someone has called in a cancellation or has gone online into the scheduling app and said they're not available," Elliot explains. "The manager gets this pop-up, which is an app executed within the program that gives him the order in which he should call [substitutes]. If he clicks on call and talks to them, he can conclude the call by saying they are available or unavailable as a substitute, or he can call someone else."

In another instance, CEBP is as a system that "monitors the health of a fleet of power plants and can identify a key problem at a particular plant that requires immediate attention." Schoeller explains that the system automatically searches through all available individuals "with the right skills and sets up a Web and audio conferencing session with them." Because problems at power plants can sometimes result in catastrophic events, CEBP is absolutely essential to speeding up the problem-solving process.

### COST VS. BENEFIT

Not all CEBP deployments are a fit for every company. One reason for

this is due to the cost associated with the technology. "The key consideration for whether or not to move up to one of those higher levels of CEBP maturity is to determine if you have a true tangible return on that additional investment," says McCloskey. "Typically, you're going to be talking about additional software licensing, software integration elements, and perhaps some custom development for your internal applications to be able to call out to these and use them effectively." As you can imagine, the cost of these individual elements can really start to add up.

To help companies efficiently incur the costs and not purchase more than they need, McCloskey recommends that they start slowly with CEBP, rather than jump in "whole hog with a full-blown UC program licensed for all of your users." You should "get the basics, identify a very specific use



"You get to this idea of unified interface where people are using these tools in a consistent way throughout the organization and they know they can rely on it."

**James McCloskey**

senior research analyst, Info-Tech Research Group

case, work with each issue individually, and then take a look at how you can repurpose those same investments." If you can start by solving one pressing issue, then you may be able to use that initial investment to move CEBP into parts of your company you hadn't previously thought of.

#### AIMING FOR A NATURAL USER EXPERIENCE

Aside from integrating a company's communication and business process, one of the major goals of CEBP

is to make the entire experience feel as natural and intuitive as possible. Eventually, Elliot says CEBP will become such a large part of doing business that it will feel completely natural. Companies will forget the ways of the past where applications were separate and contacting somebody meant dialing a number and hoping they would pick up. In other words, CEBP can help companies reach efficiency goals they only previously dreamed of. And the great news is you probably already have a head start. ●



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## TECHNOLOGY FOR BUSINESS



# Network Expansion

## Building Out Infrastructure & Meeting Capacity Needs

MOST COMPANIES ONLY HOPE their business will grow to the point that network expansion becomes an absolute necessity, as that indicates a need to accommodate a greater number of employees or customers. But network expansion can be a messy process with complex implementation and costly equipment purchases. Never mind the fact that knowing how much capacity you'll need now and in the future is an equally difficult proposition.

We'll identify some factors you need to consider when starting the expansion process, outline

methods for improving network efficiency, and help you decide whether now is really the right time for expansion.

### DETERMINE IF EXPANSION IS 100% NECESSARY

Before you start adding greater bandwidth or more access points to your network, determine whether a full expansion or refresh is what's needed. In some cases, network problems result from inefficiency rather than lack of capacity.

"Networks are actually underutilized in most companies and they're not run very efficiently, because

everything is very manually done," says Andre Kindness, principal analyst at Forrester Research ([www.forrester.com](http://www.forrester.com)). Kindness says that the solution for some companies is to look into "transforming their network as opposed to expanding it" and not necessarily adding more bandwidth, but instead "changing the way that networking is being done."

But in order to get a clear indication of whether you have efficiency or capacity issues, you need to have some way of digging into the network and gathering crucial information. This is where an NMS (network

### Key Points.....

Speak to employees about their network experiences and gather historical data in order to better plan out a successful network expansion.

Network management systems and other monitoring solutions provide an in-depth view of access points and traffic.

Keep expansion-related costs in mind but focus more on lowering operational costs through improved efficiency rather than upfront hardware and software purchases.

Do only what is necessary to get you through the next year and wait for software-defined networking to hit its stride.

management system) comes into play, according to Mark Tauschek, lead research analyst at Info-Tech Research Group ([www.infotech.com](http://www.infotech.com)). "You should have solid visibility into what's actually happening on your network, how much bandwidth is being consumed, and what kind of traffic is accounting for the bulk of your consumption," he says.

With an NMS in place, you will often discover that intense, but not necessarily business-oriented traffic is causing your waning bandwidth. For instance, YouTube or peer-to-peer networking traffic can actually "drown out that higher priority traffic" and distort the data related to your network utilization, according to Tauschek. But if, after you install an NMS or otherwise gather data from your network and still have issues, there could be more underlying problems that need to be addressed.

## LISTEN TO EMPLOYEES

Perhaps the best way to pinpoint specific problems and potential solutions is to speak directly with your workforce. In most cases, employees aren't shy about sharing problems they have with the network and how poor performance affects their productivity.

"It can be anyone from the storage personnel complaining that the network isn't reacting to what they need [to people complaining when they] bring in their own devices, use the network, and can't connect to it and get the information they need," says Kindness. "Complaints are the major impetus for a lot of change within companies," he adds. "If they can't get to the applications or services they need, then you're causing



"We need to change our mindset from thinking about components to really about system designs and architectures. It's just like a car. You can put a new spark plug in there, but if something else is wrong, your car isn't going to do anything. We need to think outside of IT, about the world around us, and how we design things."

**Andre Kindness**

principal analyst, Forrester Research



"The size of the company, or at least the number of network nodes, certainly impacts the complexity of a network. It doesn't necessarily make it more difficult to expand incrementally, but it certainly makes it more complex when you get into larger refreshes or significant expansions."

**Mark Tauschek**

lead research analyst, Info-Tech Research Group

the business to not perform the way it needs to."

With this feedback taken into consideration, you will then be in a much better position to assess how the network is actually working for employees, right whatever wrongs may exist on the network, and improve your overall business efficiency. Kindness says that by having your networking team venture out and "understand what the business needs," they can make sure that the expansion plans are "in alignment with where the business wants to go."

But still, it's important to remember that "the network touches

everything," including not only users, but applications and devices as well, says Kindness. You can't simply look at your hardware for upgrade opportunities that will answer the complaints of your workforce. You have to determine how your current network, as well as any changes you may make, will affect the performance of computers, smartphones, tablets, and other devices. After all, you don't want to fix one problem only to create half a dozen more.

## LEVERAGE HISTORICAL DATA

If you decide your network is in need of expansion, the next step is

If you decide your network is in need of expansion, the next step is to develop an expansion plan before making the leap to purchasing software or equipment.

to develop an expansion plan before making the leap to purchasing software or equipment. And using the data gathered from your NMS or other monitoring solution is absolutely essential throughout the process.

"You want to have some historical [information about] the growth of the data on the network to have a sense of how much you expect traffic to grow . . . over the next two to three years," says Tauschek. "If I'm going to throw significant money and resources at a network expansion, I don't want to just meet the capacity I have today, because six months from now I'm going to be in the same position." This all leads back to understanding the specific needs of your company. As you plan to build out your network and expand capacity, you need to look at how "each business unit uses that network differently, from HR to manufacturing to marketing," says Kindness.

Luckily for companies, vendors are starting to break their solutions into suitable fragments that accommodate more segmented markets. Therefore companies can move away from "best of breed solutions" and instead focus on those that "fit the business the best," adds Kindness. He uses the example of a hotel that needs to provide access to many guests, compared to a manufacturing plant that doesn't require that same type of access allowances. And by finding a solution that fits your environment, you can save money in the process.

## CONSIDER THE COSTS

When it comes to building out infrastructure of any kind, sticking to a strict budget will always be a crucial

aspect during implementation. But instead of focusing on the hardware and other upfront costs, Kindness says that companies should place a higher priority on operational costs. "Change in itself will always have a cost, but it's only a blip, because you typically keep infrastructure, on average, for anywhere between five to eight years."

If you've gone through the planning process and chosen equipment and software that will serve you over the long term, Kindness says

that people "will be blown away" by the actual costs. One way to make sure that you are "blown away" in a positive way is by going beyond the initial investment and finding solutions that can make your network more efficient. "Most of the cost is on the operational side," says Kindness. "Initially, people look at the hardware cost," but, he adds, it's best

to look at the costs of the management and monitoring solutions that come with the overall solution.

"There's always an overall orchestration package that runs the entire infrastructure," Kindness says, "but the thing that people really want to look at is that solution makes my operation much more efficient." And if you can do that, you will save a significant amount of money over the next few years rather than trying to cut corners upfront.

## WAIT TO EXPAND, IF POSSIBLE

Even if your company has all the telltale signs of an overburdened network and you're well prepared for large-scale network expansion, Tauschek warns now might not be the best time. He says while data centers "might be in a better position

to take advantage of emerging solutions right now" if they're dealing with top-of-rack expansion, most other companies should simply focus on "trying to keep the wheels on" and do only what is necessary to get through the next year.

"There are a lot of things going on where I would say if you need to expand your network today, you might want to just be mindful of where you're expanding," says Tauschek. "If, for instance, you're running out of capacity in a switching closet that's serving end users, just add one switch if you have to right now."

If you're wondering why Tauschek is hesitant to say companies should go full-bore with network expansion, you need not look any further than SDN (software-defined networking). Right now, most companies have to go from switch to switch or from router to router to make policy changes or affect the overall performance of the network. It's a time-consuming process many IT administrators have become accustomed to, but it won't have to be that way for much longer.

SDN will help centralize control for different access points in your network and make network adjustments much quicker and easier. And if you can wait until 2014, according to Tauschek, SDN and other emerging technologies will build on their solid foundations and "really take off."

"I think a year from now, we'll be in a position to take advantage of SDN and emerging technology [in cost-effective ways that will] not only simplify the refresh and expansion, but the ongoing day to day managing of the network," says Tauschek. "We're talking about performance improvements and greater visibility into the behavior of the network. In the next year to 18 months, you're going to have a very different view of how you can expand or refresh your network cost-effectively." ●

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# Do You Need A Virtual Firewall?

## Weighing Physical vs. Virtual Options

IF YOUR COMPANY IS RUNNING a virtualized environment, the question is bound to come up (if it hasn't already): Does it make sense to implement a virtual firewall? The answer, however, can depend on numerous company-specific factors. There are also questions as to where to locate the firewall and what type of implementation is most appropriate for your company.

We will explain how virtual firewalls differ from traditional, on-premises firewalls, and then explore issues

related to determining whether your company needs a virtual firewall and how to implement it.

### PHYSICAL VS. VIRTUAL

As Jon Oltsik, Enterprise Strategy Group ([www.esg-global.com](http://www.esg-global.com)) senior principal analyst, aptly puts it, the biggest difference between a virtual firewall and a physical firewall is fairly obvious: A physical firewall is essentially a piece of standalone hardware, while a virtual firewall is a virtual appliance installed on top

of virtualization management software. "This difference should not impact functionality, but it may impact performance," Oltsik says. "Virtual firewalls also require some security oversight to lock down the physical server and hypervisor."

Mike Fratto, senior analyst with Current Analysis ([www.currentanalysis.com](http://www.currentanalysis.com)), says aside from certain performance characteristics, in many cases a virtual and physical firewall from the same vendor are functionally equivalent. "Virtual appliances typically

### Key Points.....

Performance is a key factor in determining whether using a virtual firewall makes practical sense.

A virtual firewall can be preferable to a physical firewall for an SMB if the company is comfortable with virtualization technology and the virtual firewall is designed for SMBs.

Beyond some performance traits, a virtual and physical firewall from the same vendor often can be functionally equivalent.

When considering the use of a virtual firewall, keep in mind how highly regulated the company is.

support less performance than hardware because virtual appliances are software-based, are on shared hardware, etc.," he says. A physical firewall, meanwhile, sits at a fixed position in the network and creates a hard exterior at the perimeter "but does nothing for traffic running over the virtual network," he says.

Overall, Fratto says physical firewalls make sense when trying to establish a hardened perimeter, including

firewalls, Oltsik says. "Sometimes, they use multifunction security devices, but it is still a security device," he says. Oltsik anticipates virtual firewall implementations will increase as users grow more comfortable with using virtualization technology and as companies seek to increase their support of cloud computing and server virtualization efforts.

Among the types of firewalls available, Fratto says stateful packet fil-

anywhere instantly. This gives a lot of new options for network segmentation and access control," he says.

## IS A VIRTUAL FIREWALL PRACTICAL?

When determining whether a virtual firewall makes sense, performance is a significant factor, Fratto says. In this context, performance means "more than bits per second." Depending on the type of firewall, he says, "factors like connections per second, number of concurrent connections, and any Layer 4-7 checking can be significantly reduced on a virtual firewall," he says. Performance is one reason why virtual firewalls are best-suited for targeted applications vs. being used as a general physical firewall replacement, he says. "If the virtual firewall can't support the traffic demands, then companies need to look to either load balancing across more than one firewall or using a hardware firewall."

Other factors can include a given company's virtual environment and its future plans, Fratto says. Elsewhere, for companies that already have a physical firewall in place, he says, implementing a virtual firewall from the same company will ease deployment and manageability, as "the learning curve is much shorter, if there is any at all." He adds, though, that the virtual firewall and physical firewall "should be manageable via the same management station so it simply appears to be a firewall regardless." Companies can mix and match firewalls as needed, such as by using a virtual firewall in the virtualization environment and a physical firewall elsewhere, but "that means more management overhead."

Another issue to keep in mind, Fratto says, is licensing. "Virtual firewalls can be pretty pricey compared to the capabilities they provide." Usually, he says, virtual firewalls are licensed per unit, "which can add up." Companies should also consider

**"It doesn't make sense to try to deploy a virtual firewall like a physical one because each hypervisor is its own connection to the physical network. This may change in the future, but currently if you have 10 hypervisors you have to have individual connections to the physical network."**

**Mike Fratto**

senior analyst, Current Analysis

one that protects the virtual infrastructure, services, etc., from unauthorized use. Here, he says, "an existing data center firewall may suffice." Virtual firewalls, meanwhile, are often targeted at a subset of services running within the virtual environment rather than the entire environment. Thus, he says, "you end up with a bunch of little perimeters based on applications or departments," for example, rather than one large perimeter. That means applications can be better protected from attack than if using VLANs and other isolation techniques, he says.

Another distinction between physical and virtual firewalls is that a virtual firewall and the servers it protects can reside anywhere in the virtual environment, something that allows the movement of virtual machines while maintaining the virtual perimeter, Fratto says.

## COMMON FIREWALL IMPLEMENTATIONS

Currently, most organizations still use firewall appliances vs. virtual

filtering is the most commonly used among businesses, as are application proxies that are specialized to a particular protocol, such as HTTP, or a particular application, such as one enabling access to company email via Web access.

In terms of where to locate a virtual firewall compared to a physical firewall, Fratto says physical firewalls are generally positioned at network choke points whereas virtual firewalls are positioned closer to applications. "It doesn't make sense to try to deploy a virtual firewall like a physical one because each hypervisor is its own connection to the physical network," he says. This may change in the future, Fratto says, but currently if you have 10 hypervisors you have to have individual connections to the physical network.

Oltsik says that while companies should place primary network firewalls in the same locations regardless of whether they are physical or virtual in nature, "virtual firewalls are handy because you can deploy them

the cloud platforms they're looking to support if planning to move to a private cloud platform or a public cloud provider, he says. "While many of the public cloud providers offer basic firewalls as part of their services, using a known firewall is often easier operationally."

Where SMBs are specifically concerned, Oltsik says a virtual firewall is preferable to a physical firewall only if the company is comfortable with using virtualization technology and the company is able to select a virtual firewall that's designed especially for SMBs. That means it should provide good ease of use, standard configuration templates, simple rule configuration, and other benefits. Fratto says the question isn't whether an SMB should or shouldn't buy a virtual firewall. The question is "whether a virtual firewall will be suitable or not. If an SMB is running a virtual environment and it needs firewalling closer to their applications, then it makes sense. Otherwise not."

## OTHER CONSIDERATIONS

When deciding whether to use a virtual or physical firewall or a hybrid approach combining the two, companies need to mull over several primary considerations, including how comfortable it is using virtualization technology. If the company is comfortable with provisioning, maintaining, and securing a virtual firewall, Oltsik says, "then it shouldn't be a problem." Oltsik notes that he sees virtual firewalls often in remote offices of larger companies, as well as in hosting and cloud data centers to segment resources for multi-tenancy. Though he doesn't see virtual firewalls as much in SMBs, he says, "that may change."

One consideration companies should keep in mind regarding virtual firewalls is how regulated the company is. Highly regulated companies, Oltsik says, should check with their auditors to determine whether



"[V]irtual firewalls are handy because you can deploy them anywhere instantly. This gives a lot of new options for network segmentation and access control."

**Jon Oltsik**

senior principal analyst, Enterprise Strategy Group



"Virtual firewalls can be pretty pricey compared to the capabilities they provide."

**Mike Fratto**

senior analyst, Current Analysis

a virtual configuration constitutes a compliance violation. Location is another consideration, he says, as "it may take weeks to get a firewall appliance through customs in some countries, while a virtual machine can be downloaded instantly."

If the company has numerous remote offices, Oltsik says, "it may be best to deploy virtual firewalls in standard configurations and then centrally manage them." Further, he says, "I would also think long and hard about whether you want to dedicate a physical server to the firewall or run multiple virtual machines on a server that hosts virtual firewalls. From a security perspective, running multiple virtual machines could be a bad idea, and I can't imagine it would meet regulatory compliance requirements."

Where hybrid configurations are concerned, Fratto says, locating a physical firewall in front of a virtual environment can make sense "just to restrict access to the underlying virtual environment, which is separate from restricting access to servers in the virtual environment." The primary consideration of which firewall setup to use, however, is whether the company's security policies or external requirements (such as regulations) dictate that a more targeted

firewall strategy is necessary, he says. "A related consideration is whether the company has to document and prove out their security architecture," Fratto adds.

A physical firewall sitting at the perimeter of the virtual network can provide adequate protection for applications running in the virtual environment, Fratto says. "IT can create traffic separation within the virtual environment using VLANs, for example. If a server on one VLAN wants to talk to another server on a different VLAN, the traffic has to pass through a router that can reside at the perimeter or at the edge, or the server has to have multiple interfaces on multiple VLANs," Fratto says. "Either way, you probably only want to allow access to a subset of services on the server, so a virtual firewall can limit connections to exactly what is needed to allow the application to work."

The additional burden comes when it's time to prove that an application was only accessed by authorized systems, as there might be issues demonstrating that VLAN separation is good enough, he says. "The best thing to do is work with whoever manages your company's security policy and regulatory compliance to determine how your company will meet the requirements," he says. ●



# IT Asset Management

## What ITAM Is & How It Relates To Your Business

IF YOUR COMPANY is like many others, it might not be giving ITAM (IT asset management) the attention it deserves. SMBs typically make ITAM a priority only when major upgrades roll around or during lean financial times when cost cutting and/or efficiency improvements are most sought after. An arguably more important point, however, is that consistently performing rigorous ITAM can lead to numerous desirable benefits and help avoid many risks.

### DEFINING ITAM

ITAM is a multifaceted endeavor but generally boils down to this: accounting for all the company's IT hardware and software assets by col-

lecting and managing data related to ordering, delivery, location, age, cost, warranties, service, maintenance, compliance, licenses, patches, upgrades, support, and more. According to Sandi Conrad, WCO (World Class Operations) practice lead with InfoTech Research Group ([www.infotech.com](http://www.infotech.com)), ITAM provides the support to manage vendors and contracts, support security efforts, and cut costs, "sometimes by as much as 25 to 50%."

Patricia Adams, research director with Gartner ([www.gartner.com](http://www.gartner.com)), breaks asset management into three components: financial, contractual, and inventory. The financial component details the hardware/software asset purchased and its depreciation,

residual value, lifecycle, etc. Associated terms and conditions, warranties, and entitlements fall into the contractual category. And the inventory component entails who is using the asset, what it looks like, and its location. By centralizing these three data sources, Adams says, a company can identify related risks, whether it has over- or under-bought, asset relocation possibilities, and more.

Organizations that have embraced ITAM and related training "have realized huge savings in their IT investment, as well as compliance-violation avoidance," says Keith Rupnik, ITAM specialist with the International Association of IT Asset Managers ([www.iaitam.org](http://www.iaitam.org)). Larger organizations,

### Key Points

ITAM involves accounting for all of a company IT assets through specialized collection and management of data.

Many organizations currently do a poor job at ITAM, for reasons that often include lack of resources.

Awareness of the importance of ITAM has increased, in part because software audits have increased.

Outsourcing ITAM functions to third-party providers is an option.

he says, have saved millions. "For SMBs, significant savings relative to the revenue is possible, but also major efficiencies gained in the productivity of their employees."

### LACKLUSTER PERFORMANCE

For all possible benefits, general sentiment is that SMBs currently do poorly at ITAM. Clive Longbottom, analyst and founder of Quocirca ([www.quocirca.com](http://www.quocirca.com)), says most asset management is done in spreadsheets "that become rapidly outdated and "don't reflect what's really out there." Quocirca research has found that even large organizations struggle, he says, as there is an average +/-20% spread when comparing the total number of servers they believed they owned vs. the number they actually owned. Overall, he says, companies view the cost of implementing a proper ITAM system as avoidable, while IT departments don't tend to see ITAM's value at a business level.

Generally speaking, staffing requirements for IT teams are driven by business needs, Conrad says, "and there's nothing sexy to ITAM that's perceived to benefit the business." Further, ITAM requires skills similar to administrative or accounting but with an understanding of what IT needs in terms of software, equipment, timing, license agreements, and contracts. Additionally, depending on the company, ITAM can be a full-time endeavor. Many companies simply lack the resources to support this.

Stephen Mann, senior analyst with Forrester Research ([www.forrester.com](http://www.forrester.com)), says businesses also tend not to fare well at ITAM because they don't always view IT assets as entities to leverage in pursuit of business goals. Additionally, some companies have little insight the assets they do use to achieve business goals. Others, he says, have never had reason to focus on IT costs or explore strategies to improve efficiency.

Often, ITAM gets overlooked. Executives handle so many other priorities daily, Adams says, that asset



Most asset management is done in spreadsheets "that become rapidly outdated and "don't reflect what's really out there."

**Clive Longbottom**  
analyst and founder, Quocirca



"There's nothing sexy to ITAM that's perceived to benefit the business."

**Sandi Conrad**  
World Class Operations practice lead, Info-Tech Research Group

management isn't something at front of mind. "When budgets get cut, then they want to make sure they're focused on how to use things effectively," she says. Adams notes, however, that because lean times have continued globally since 2008, "we have seen a different focus on asset management than the decade prior."

### INCREASING AWARENESS

While many companies aren't currently doing ITAM well, awareness of ITAM's importance seems to be increasing for reasons tied to expenses, BYOD, virtualization, leasing, warranties, and software audits. For example, more companies are looking to virtualization on the desktop to save money, Adams says, and "if you do any type of virtualization, you do need to have good software license management in place."

Elsewhere, many leasing vendors are offering great deals on hardware, Adams says, which also requires good asset management. A company that goes over a lease agreement by two months, she says, "might as well have purchased that asset" as the value can be completely lost if the company can't locate the asset or must turn to the secondary market to replace it.

Conrad says an increase in software audits in recent years has been

a factor in increased awareness of ITAM's importance. "When the economy gets soft, the audit business increases," she says. "Lucky" companies are audited by the software vendor and may only have to pay for past unpaid usage. If audited by a compliance organization, however, a company could face "fines of up to three times the retail price for each license out of compliance," she says. Further, companies buying software in response to audits typically lose some negotiation power along with the opportunity to analyze installs vs. actual usage, which can increase the cost to reach compliance.

Despite increased audits, Conrad says, many companies still aren't dedicating resources to ITAM, including companies audited annually for several years. "There's still the perception out there that ITAM is a cost with low payback, rather than a means to right-size the budget," Conrad says. Rupnik says SMBs "are the ones typically caught" by compliance agencies "because they didn't know any better, which results in financial hardship."

### PERPETUAL PERSISTENCE

Adams recommends approaching ITAM by focusing on the process and building it around the different stages of an asset's lifecycle,

including requisition, receiving, deployment, maintenance, retirement, and disposal. "Most organizations spend more time picking a tool than they do defining their process," she says. Next, look at the ITAM tool. If there are processes not flexible in the tool, she says, "you'll be aware of whether that tool will be a good fit or not." Tool sets essentially include pieces covering inventory, discovery, asset management, and software licensing optimization, Adams says.

While organizations typically do well in regard to the physical aspects of assets because they usually have tools in place with inventory and discovery functionality, a much lower percentage does well in all ITAM facets, Adams says. "One of my favorite sayings is it's 80% process and 20% tool," she says. Due to being resource-constrained, small organizations tend to believe putting a tool in place will "solve everything." Realistically, though, companies need "good, robust, rigorous processes" to ensure the data in the tool is right, and "that's one of the key constraints I see in medium and small businesses."

Outsourcing ITAM is an option, and Conrad says there are great third-party providers. She cautions, though, to choose a partner "that's part of the process," as adds, moves, and changes happen constantly and "it can be difficult to keep up with these if the provider isn't involved in the daily process." Furthermore, she says, providers can vary dramatically in what they include. For example, offerings can range from a hosted service that discovers and reports software and hardware on the company's network to an on-site contractor that acts as a liaison between the purchasing, vendors, and IT processes.

"The biggest mistake I see is with companies assuming they're getting full ITAM when they're actually only getting an inaccurate inventory," Conrad says. In terms of software, she says, remember



Rupnik says SMBs often "are the ones typically caught" by compliance agencies "because they didn't know any better, which results in financial hardship."

**Keith Rupnik**

ITAM specialist, International Association of IT Asset Managers



"Most organizations spend more time picking a tool than they do defining their process."

**Patricia Adams**

research director, Gartner

## ITAM Best Practices

Rigorous and consistent ITAM is worthwhile for numerous reasons. As Info-Tech Research Group's Sandi Conrad says, "Once the money is spent, you can't get it back, so if you've overbought on software licenses or have lost equipment, you've wasted money." Conversely, Conrad has seen companies cut software budgets by 25% through better management of maintenance and support. To that end, the following are various ITAM best practices:

- Determine immediate and long-term (12-36 months out) goals.
- Create ITAM policies and policy management.
- Communicate with employees and educate them about ITAM goals.
- Assign asset management to a qualified technician.
- Match an ITAM tool to your environment.
- Begin the ITAM process by targeting top vendors you use and big-spending areas.
- Automate processes when possible.
- Centralize the IT acquisition process.
- Understand agreements, contracts, product usage, future plans, and compliance statuses.
- Ensure financial, inventory, and vendor management.

that "ultimately the software vendors will hold your organization responsible for compliance, regardless of third-party relationships, so ignoring compliance issue notifications could be detrimental."

Also important to remember is that persistence pays off. Rupnik sums this up well by characterizing ITAM

as a "program" that "never ends and can always be improved." An ITAM manager, he says, can bridge the gap between the business and IT. "Looking at it another way, organizations need finance regardless of the state of the economy or the business. ITAM, like finance, is a core competency," he says. ●



# Big Data

## A Quick View Of The Industry

BIG HYPE. BIG MONEY. Big potential. All apply to “big data,” a burgeoning technology sector that’s garnered big attention despite a still relatively young existence.

Most executives have at least run across the term “big data,” understandable given the much-touted promise big data holds. Still, many executives aren’t clear what big data exactly implies. Others that have a grasp on what big data is aren’t as certain of how to get started using it. Ultimately, what’s arguably most important to know about big data is that you should give it a long, hard

look sooner than later. As Benjamin Woo, managing director at Neuraltix ([www.neuraltix.com](http://www.neuraltix.com)), says, “I have a trademark saying about big data, ‘If you’re not doing it, your competitors are.’”

### WHAT IS BIG DATA?

Numerous definitions for big data have been floated about to date, but essentially it entails data sets (structured and unstructured) so massive in scope that processing and analyzing them with traditional approaches (databases and software) is incredibly difficult. “Big data” is

used generically to refer to the various technologies available to tackle those huge data sets, which might contain information related to social media (tweets, posts, photos, etc.), business transactions, and energy consumption.

In a June 2012-released survey of 154 C-suite executives from various international industries that Harris Interactive ([www.harrisinteractive.com](http://www.harrisinteractive.com)) conducted on behalf of SAP, 28% defined big data as “the massive growth in transaction data”; 24% described it as “new technologies that address the volume, variety, and velocity challenges of big data”;

### Key Points.....

“Big data” refers to data sets so large in size that using traditional processing and analyzing methods is difficult.

A misconception regarding big data is that companies need millions of gigabytes of data to get started.

Companies are using big data to lower IT costs, increase sales, improve customer services, and make business operations more efficient.

Some big data apps and technologies are available free or for a minimal cost, and a lot of capabilities are available as a service via the Internet.

19% stated it “refers to requirements to store and archive data for regulatory compliance”; and 18% defined big data as “the rise in new data sources, such as social media, mobile device, and machine-generated devices.”

Woo defines big data as a “set of technologies that creates strategic organization value by leveraging contextualized complete data sets.” Ultimately, he says, “big data is about making money from data,” which the company can own or has free or paid access to.

How massive are these data sets? For some perspective, consider recent research from IDC ([www.idc.com](http://www.idc.com)) that stated all new data created globally in 2000 totaled roughly 2 million terabytes compared to double that amount per day generated now. Helping create that new data are smartphones, smart meters, mobile sensors, and other Internet-connected devices. In 2011 alone, IDC stated, the world generated 1.8 zettabytes of data. By 2020, IDC predicts we will generate 50 times that amount.

## HOW BIG DATA IS USED

In a March 2012 release touting IDC’s global forecast for big data technology and services, Dan Vesset, IDC program vice president, business stated, “For technology buyers, opportunities exist to use big data technology to improve operational efficiency and to drive innovation. Use cases are already present across industries and geographic regions.” IDC forecasts the global big data market to expand from \$3.2 billion in 2010 to \$16.9 billion in 2015.

Woo says organizations can use big data technologies “to better understand their customers or create new streams of revenue and profit.” Some companies are using big data to improve their supply chains and others to improve customer support, he says. Additionally, “one company is using it to predict potential failures up to three years in advance,” he says. A well-documented case study concerning big data involves



**“By using analytics, companies large and small are able to leverage technologies like predictive analytics that result in giving these companies a competitive advantage.”**

**Benjamin Woo**

managing director, Neuralitytix

UPS, which uses big data technologies to “determine the most optimal routing given traffic, weather, etc. for their trucks to go from one place to another,” Woo says. “Even more impressive is that in routing their trucks, they try where possible to have their trucks turn right, given that a right turn consumes less fuel, is safer, and quicker.” Woo says some retailers use big data technologies to better understand individual customers, not just a demographic.”

Interestingly, the Harris-SAP poll found that small and medium-sized enterprises are “realizing the competitive advantages of using and managing big data faster than the larger competitors” and are “more readily identifying its benefits.” Among competitive advantages to gain from using big data that respondents reported are more efficient business operations (59%), boost in sales (54%), lowering IT costs (50%), enhanced agility (48%), and attracting and keeping customers (46%). Seventy percent of respondents indicated they’d expect a return on big data investments within 12 months due largely to such advantages.

“By using analytics, companies large and small are able to leverage technologies like predictive analytics that result in giving these companies a competitive advantage,” says Woo. To date, a few industries have taken big data further than others, he says, including healthcare, financial services, and retail. “It’s arguable whether governments have done enough, but they are certainly one of the biggest beneficiaries,” Woo says, citing homeland security and fraud detection as examples.

## WHERE TO START

A big misconception concerning big data, Woo says, is that a company needs millions of gigabytes of data to get started. “‘Big’ is a relative term,” he says. “What is big to one company is tiny to another.” Another misconception is that big data solutions are expensive; Woo explains that some big data applications and technologies are free. “Much of these capabilities come at no or minimal costs. A lot of big data capabilities are already available as a service over the Internet,” he says.

Woo advises companies to ponder the question: “What if?” “Business owners should also turn to their smartphones. Many smartphone applications are big data at work,” he says. For example, Woo cites an app available for the Web and Android and iOS devices that uses Google Map data, an individual’s input, and rental listings from various sources and brings together the multiple data sets to let users find potential homes for rent meeting the users’ criteria. “This can save potential renters significant amounts of time, effort, and frustration,” he says.

Woo says a business manager who asks “How can big data help my business?” is asking the wrong question. “It’s simply a question of: ‘How can my business use big data?’” he says. Upon instructing business personnel to think about potential revenue opportunities, he says, “leverage big data to either prove or disprove the opportunity.” Ultimately, he says, “All companies need to be integrating big data technologies into their processes.” ●



# Virtual Machine Backup

## What You Should Know

EVERY COMPANY UNDERSTANDS how important it is to back up mission-critical data or even archive emails for future reference. Backups are not only crucial for disaster recovery purposes, but also for the long-term business continuity requirements of your company. With the recent growth in virtualization as a way to maximize resources and implement consolidation measures, companies will need to change the way they think about backups. Now, more than ever, it is necessary to consider your virtualized assets when deciding what to back up and how.

"The big thing that's changed relatively recently is the criticality of what we're virtualizing," says Dave Russell, research vice president at Gartner ([www.gartner.com](http://www.gartner.com)). "It's really the importance of the payload of the data. A few years ago, it might well have been test and development data that was being

virtualized, but now it's the production, mission-critical workload; the things that we normally would've protected in the past on physical machines."

For that reason, it's important to come up with a VM (virtual machine) backup policy that is equal to your policy for traditional data backups. You need to prioritize virtualized data and applications just as you would data stored in a more physical environment or else you may not be able to fully restore your critical systems in the event of a temporary outage or widespread failure. We'll discuss a few of the best practices you can follow when backing up your VMs.

### UNDERSTAND YOUR ENVIRONMENT & BACKUP NEEDS

The important thing to remember about virtual machine backup is that it isn't exactly the same as traditional

backup environments and that "doing business as usual from a backup perspective won't typically work effectively in a virtualized environment," says Russell. He explains that one of the biggest problems facing companies today is the sheer amount of solutions on the market that are specifically built for smaller implementations. For instance, you may start with a small pilot project and your "virtualization administrator can download a tool and feel very confident it's going to work," he says, but once you start to deploy 300 or 500 virtual machines at the same time and reach critical mass, "the cracks will start to show."

Russell also points out that traditional backup is a resource-intensive process that can fill up your input and output streams as can other resources such as CPU and memory. Because virtualization is all about maximizing efficiency and putting numerous virtual

machines on one physical server, it can lead to overloading your equipment. If you were to implement 20 VMs on one physical machine, stack or increase the density of the VM images, and then try to back it up with 10% of your resources, you would be “over-subscribed by 200%,” says Russell. You need to make sure you have systems in place that can handle that amount of traffic and prevent overtaxing your infrastructure.

Another key to successful VM backup is to consider what you’ll need to protect in the future. Rather than focusing on the here and now, you’ll need to project where you see your company a year or more from now. One solution may work perfectly fine with five virtual machines, but as you grow to 50, 500, or 1,000 machines, Russell says, you have to determine who’s going to be responsible for them. From there, you have to decide what types of plug-ins, applications, and reporting tools, you’ll need. That’s where doing your due diligence upfront will really pay off.

## CHOOSE THE RIGHT SOLUTION

When choosing a virtual machine backup solution, most any program will do in the short run, however it is important to choose a solution that will meet your company’s needs over a long period of time. Russell compares the process of choosing a VM backup solution to buying a car. “Any car can seem great one day,” he says, “but what do you really need from it over a long period of time?”

Some backup solutions are wizard-like and walk you through the selection process. Others, Russell says, “will



“The beautiful thing now with virtualization is that it’s basically an encapsulation of the data and actual compute cycles, so you can replicate that and even recover it elsewhere. Your investment in backup and disaster recovery now extends beyond where we were in the past.”

**Dave Russell**

research vice president, Gartner

require encoding from the ground up.” Your company’s backup needs and staff expertise will likely dictate whether you’ll need a fully formed solution or something more customizable.

You’ll also want to consider disaster recovery and other factors when shopping for backup solutions. You may be able to store VM images on a server, but will you be able to access them immediately if your company experiences an outage? Russell recommends finding a solution that lets you make the target location (where you’re writing the virtual machine) a cold standby server for your company to use in case of an outage. That means that if there’s a failure of any kind in your primary system, you essentially have an up-to-date replacement waiting in the wings.

As with any technology investment, cost will always be a factor. It’s important to speak to vendors to figure out how they charge for their services and whether they are compatible with your internal systems. Russell says that some vendors offer a free backup capability in their hypervisors, but just because they’re free “doesn’t mean that they will meet your requirements.” Some vendors

also charge by the socket or by the terabyte, so Russell says “you’ll need to feel what type of model is going to work for you at scale when you deploy it throughout the environment.” The more accurate you are with your projected number of virtual machines, the better chance you have of not overpaying for a solution.

## MAKE A BACKUP SCHEDULE & STICK TO IT

Once you have a backup solution in place, you can’t simply set it and forget it. You need a game plan that details the systems you need to back up and how often. “The frequency really depends on several things but most fundamentally the criticality of the data and the change rate of the data,” says Russell. “With some systems, the new and modified data is pretty infrequent, so you could argue that you only need to protect them once a week. Other systems are either so important or are being added to and extended on such a regular basis that maybe snapshotting them once an hour may be appropriate.” You can save money as well as crucial resources by backing up only what is necessary and following a strict policy. ●

You need to prioritize virtualized data and applications just as you would data stored in a more physical environment or else you may not be able to fully restore your critical systems in the event of a temporary outage or widespread failure.

# Time To Re-Think Network Management

With Napatech Solutions In Use, Customers Take Notice

LARGE NETWORKS ARE CHANGING, and network probes—data-collecting devices that generate usable information for network administrators—are playing a key role in managing them. Dan Joe Barry, vice president of marketing for Napatech ([www.napatech.com](http://www.napatech.com)), spoke with us about how Napatech solutions help deal with the challenges of today's telecom networks.

## **Q** *What broad changes in large networks prompt the need for better management capabilities?*

**A** There are a few trends that are driving change. In particular, the adoption of mobile data in general (including laptop dongles) and smart devices are driving accelerated growth in traffic volumes in telecom networks. Also, general Internet traffic is still growing between 50% and 80% a year, and more and more services—especially critical and time-sensitive services—are now being transported over Ethernet and IP networks. It has only been in the last few years that telecom networks have made the transition to Ethernet and IP. For example, LTE [Long Term Evolution] 4G networks will be the first mobile networks exclusively based on Ethernet and IP.

Traditional telecom protocols included a lot of management overhead and carriers have built up their network management strategies based on this fact. The problem is that Ethernet and IP don't include the same level of management information, which leads to the

need for probes and real-time network management. This represents a different way of working for carrier network operations teams.

## **Q** *What role do network probes play regarding these challenges?*

**A** Managing Ethernet and IP networks is different than managing traditional networks. One of the reasons is that Ethernet and IP are "bursty" and dynamic, so you don't know when and how much data you are going to receive; it is not a steady stream. IP routers make decisions about what is the best path through the network, so it is also difficult to predict where traffic is flowing as the network paths may have changed. The only way to know for certain what is happening in the network at any given time is to monitor the network in real-time using probes.

## **Q** *With improved network management capabilities in place, what do customers notice?*

**A** In addition to more critical and time-sensitive services being supported on Ethernet and IP networks, there is also accelerated growth in traffic loads. Unless carriers continue to aggressively build out capacity, which is an expensive proposition, something will have to give. Carriers know this and recognize the need to monitor both the network and the services supported to assure quality of service and quality of customer experience. In addition, with real-time reaction capability



**Dan Joe Barry**  
vice president of  
marketing for Napatech

in place, carriers can use the information gathered to understand customer behavior better and offer services that better address customer needs.

## **Q** *What Napatech solutions improve network management?*

**A** We enable equipment manufacturers to build probes using standard server hardware. Our products ensure that all packets that need to be analyzed are captured and delivered with zero packet loss to the analysis application in the probe. We can provide this capability at speeds up to 40Gbps. In addition, our adapters have the intelligence to off-load a lot of the data-handling tasks that would otherwise need to be performed by the analysis application. For example, we can identify flows up to layer 4 [i.e., the transport layer], filter these flows, and then distribute them to multiple server CPU cores to allow parallel processing by the analysis application or even to support multiple applications running on the same server. This allows applications to scale with the number of CPU cores, which in turn allows them to grow along with data traffic growth and increasing speeds. ●

A man with short brown hair, wearing a dark blue and black striped button-down shirt and dark jeans, stands in a server room. He is holding a large white rectangular sign in front of his chest. The sign has the text "Make IT Simple" written in a black, casual, handwritten-style font. The background shows rows of black server racks filled with various electronic components, with some blue cables visible in the distance.

Make IT Simple

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# Side-Channel Attacks Explained

## How Hackers Use IT To Break Through Encryption Barriers

SIDE-CHANNEL ATTACKS are the result of hacking techniques that allow outsiders to “watch” or analyze seemingly unimportant aspects of equipment or power consumption to gather data. Side-channel attacks are designed to get past encryption measures in order to either gain access to data or corrupt a system from the outside. To help you understand side-channel attacks and determine how much of a threat they might be to your business, we’ll walk you through how these attacks are carried out and by whom, and discuss how you can put yourself in a better position to prevent them.

### HOW ARE THEY PERPETRATED?

Ramon Krikken, research vice president at Gartner ([www.gartner.com](http://www.gartner.com)),

compares the side-channel attacker’s point of view to that of someone who is locked out of a house. “Maybe you sit in the chair outside and you hear sounds, and they give you an idea of what they’re doing,” says Krikken. “Maybe you can see whether the light is on or off and that gives you an idea of what they’re doing. All of those things don’t directly tell you what it is, but they give you a really good idea—or an exact idea—of what is going on inside that black box.”

The particularly scary thing about side-channel attacks is that they can be carried out in a variety of ways. Using side-channel attack methods, attackers can gather information about “power use, computer clock cycles, and electrical emanations, which could be used to determine important security

information,” says Matthew Scholl, deputy division chief of the computer security division of the National Institute of Standards and Technology ([www.nist.gov](http://www.nist.gov)). Scholl adds that the end goal for these hackers is to get “cryptographic,” or encryption, keys that give outsiders the ability to access protected data or “corrupt a system that depends on those keys to protect data.”

But monitoring power and electricity isn’t the only way for side-channel attackers to gather information. In fact, according to Krikken, data thieves can simply watch the “patterns of packets that go back and forth” during a VoIP call and “under very specific situations” be able to figure out what is being talked about; even something as inconsequential as a key press can lead to an opening for hackers. “You type

something on the keyboard and whenever you press a key is when one computer sends an encrypted message to another," says Krikken. "You press another key and it does it again. Just a pattern of how those packets go over the network can give you an idea of what words and sentences a user is typing."



"[If] I record the pattern of packets and run it through a statistical analyzer, that analyzer may be able to narrow down what it is an infinite number of passwords to maybe a million or two million that I need to try."

**Ramon Krikken**

research vice president, Gartner

## WHO IS RESPONSIBLE?

As you can already tell, side-channel attacks are much more complicated than more well-known alternatives, which means the culprits of these attacks are knowledgeable in advanced cryptology and other encryption-breaking techniques. This includes people trying to gain access to personal information, such as medical records, as well as other potentially compromising data. "I could imagine intelligence agencies and foreign governments being very much interested in perpetrating these kinds of attacks," says Krikken. Although he doesn't have any specific data or research on the matter, Krikken does foresee the possibility of rival companies using "these attacks for their espionage capabilities," as well.

Other people using side-channel attacks, for a much less nefarious reason, are researchers trying to illuminate the presence of holes in encryption technology as well as for other purposes. Scholl says researchers attempt to perform side-channel attacks in order to "alert security communities of issues, seek solutions, and improve our overall cyber ecosystems." The goal is to help put better measures in place to prevent not only more traditional hacks, but these newer, more complex side-channel attacks, as well.

## WHAT CAN YOU DO TO PREVENT THEM?

Unfortunately, there is some bad news and some good news when it comes to preventing side-channel attacks. The bad news is that "you can't prevent all of them under all circumstances," says Krikken. He adds that



"Organizations should maintain a positive physical control over their IT assets that generate or keep cryptographic keys. Do not lose them, lend them out, or leave them unattended."

**Matthew Scholl**

deputy division chief, computer security division,  
National Institute of Standards and Technology

the only way to protect against all side-channel attacks would be to "lock yourself in a lead room and do no business." The good news is that Krikken believes that some encryption solution vendors are building side-channel attack prevention technologies into their products in to head attackers off at the pass.

Scholl has a few tactics that should help companies minimize the potential for side-channel attacks, if not stop them completely. He points out that perpetrators would need to be in close proximity of their target, so he says you should "know who is in your facilities, what they are doing, and why they are there." He also recommends that maintenance personnel and other visitors be escorted around the facility by trusted staff. Scholl adds that some vendors are manufacturing security products designed to shield against "smart cards, RFID items, proximity cards," and other potential threats, so companies may also be able to take advantage of those solutions.

## SHOULD YOU BE WORRIED RIGHT NOW?

Krikken says that while side-channel attacks are certainly real, they are rare in

the SMB world. This means that small and medium-sized enterprises don't have as much to worry about as governmental agencies and other large targets for side-channel attacks. Instead, Krikken says that companies should focus on encryption.

"The average SMB should not worry about side-channel attacks right now," says Krikken. "If they do, it'll be a distraction from all the other things that can go wrong during encryption. There are much bigger fish to fry that we still need to get right. It is something where companies can follow rather than lead; and by and large let product companies take care of this for them."

Still, as with all potential threats, it doesn't hurt to do your research up front and keep an eye out for emerging technology with side-channel attack prevention built-in. As encryption technology continues to grow stronger, it will be more difficult for hackers to gain access to data through more traditional avenues. It's possible side-channel attacks will become more common in the future, but as for right now, it's safe for SMBs to focus on more pressing security matters and leave side-channel attacks to vendors. ●

## ENERGY-CONSCIOUS TECH *Greenovations*

The electronic devices that make our lives easier also produce some unwanted side-effects on the environment. Fortunately, many consumer electronics manufacturers and businesses are working to create products that keep us productive while reducing energy demands to lessen our impact on the environment. Here, we take a look at the newest environmentally friendly technology initiatives.

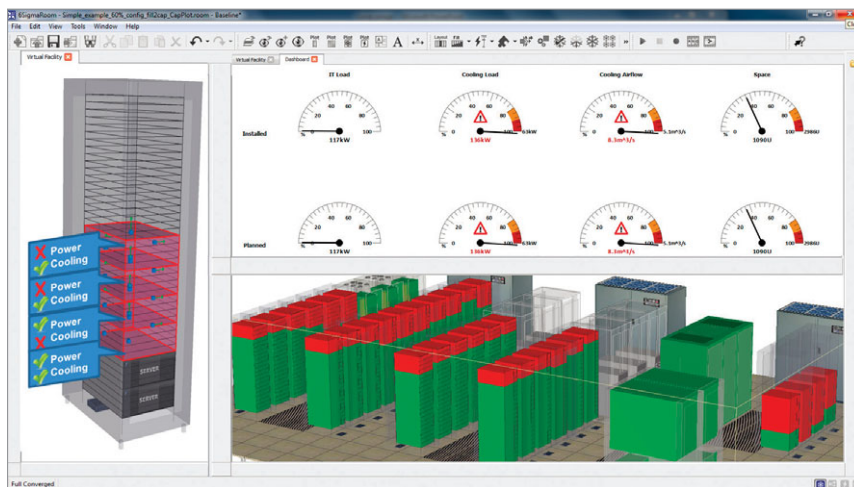
Future Facilities' 6SigmaDC lets you monitor the efficiency and capacity of your data center, provides a virtual representation of your facility, and points out potential changes you can make to improve performance.

### WORM COMPOSTING BENEFITS CHARLOTTE DOUGLAS INTERNATIONAL

► The next time you throw away that half-eaten doughnut while running to your gate at the Charlotte Douglas International Airport in North Carolina, take solace in the fact that you're helping the environment. The airport has a recycling center that is home to close to 2 million red wiggler worms that dine on food scraps and other trash travelers leave behind. A staff of about 15 workers sort through the trash and remove aluminum, plastic, and other recyclable materials. All of the other "edible" matter (what's edible for worms) is given to the worms, which devour the matter and turn it into nitrogen excrement the airport will use as fertilizer in the future. Since implementing this approach, the airport has cut down the waste it sends to landfills by about 70%.

### FUTURE FACILITIES HELPS COMPANIES VISUALIZE THEIR DATA CENTERS

► Monitoring solutions continue to grow in popularity and usefulness as companies try to get a better handle on their overall data center performance and achieve energy efficiency within the facility. Some solutions are designed to give you quick status updates regarding equipment and whether it is running correctly, but they don't necessarily provide feedback on efficiency or recommendations for possible adjustments. Future Facilities 6SigmaDC ([www.futurefacilities.com/processor/link.html](http://www.futurefacilities.com/processor/link.html)) is different in that it provides an in-depth view of your data center and helps you with future capacity planning. In one instance, Future Facilities helped a customer figure out why it was hitting a wall when it tried to go above an IT load of 688kW to the 980kW the facility was designed for. After making the recommended changes, the company's data center reached its expected level of performance, making the facility much more energy efficient.



## GREEN DATA CENTER MARKET TO SEE HUGE GROWTH THROUGH 2016

► It's no surprise that the green data center market is growing because many companies are working tirelessly to find new ways to improve overall efficiency, lower power consumption, and take advantage of low-impact technologies. But what may be surprising to some is that the market is expected to more than double in size from \$17.1 billion in 2012 to \$45.4 billion in 2016, according to a recent report from Pike Research.

Aside from power and cooling efficiency, the Pike Research report points to virtualization and cloud computing as major drivers behind the expected green data center market growth. Virtualization helps companies take advantage of servers by maximizing loads and taking utilization rates to new highs. Virtualization and cloud computing help ease the burden on data centers, make it possible to consolidate to fewer servers, and improve the data center's efficiency and power consumption. As these solutions continue to improve and new technologies start to emerge, the green data center market is poised for a growth rate of about 28% per year, according to Pike Research.

## STANFORD RESEARCHERS DEVELOP SOLAR PANEL STICKERS

► One of the disadvantages of solar cells is that they often have to be implemented in large panels, which can lead to logistical issues and therefore fewer potential use cases. Because companies and consumers alike are looking for flexibility, portability, and convenience in their products, solar energy can sometimes fall by the wayside. But if Stanford researchers have their way, people will be using a new solar cell design for a variety of applications. Stanford developed a peel-and-stick solar cell that is thinner than some other solar cell alternatives and can adhere to almost any surface. For instance, researchers have displayed examples of these solar cells attached to a cell phone, a window, and even a business card. But the researchers aren't stopping at the solar level. In fact, they see multiple applications for this peel-and-stick technology, including LCDs, printed circuits, and more.

## PRESIDENT OBAMA SIGNS ENERGY EFFICIENCY INTO LAW

► In December 2012, President Obama signed the American Energy Manufacturing Technical Corrections Act, which is designed to move green technology forward with an emphasis on energy and efficiency in manufacturing. The new act incorporates portions of the Shaheen-Portman bill as well as provisions from a previous Department Of Energy program.

The new piece of legislation calls for coordinated research and development of efficient technologies, improved industrial electrical efficiency, and improved overall best practices of energy efficiency in the federal government, and much more, according to the Alliance to Save Energy.

## BERKELEY LAB'S FLEXLAB TARGETS BUILDING MATERIALS & MORE

► With a heavy focus already on green IT equipment, the next logical step is to research green building materials and other aspects of building designs. To foster this kind of research,

Berkeley Lab is building a facility that will allow designers and engineers to test building materials, including windows and walls, and environmental solutions such as HVAC systems. The 9,000-square-foot \$16 million FLEXLAB (Facility for Low-Energy eXperiments on Buildings) will focus on cutting down the amount of greenhouse gas released from buildings, which Berkeley Lab says makes up 40% of all such emissions. FLEXLAB will consist of six test beds, each focusing on environmental effects emissions have on buildings and their surroundings. Berkeley Lab expects to open the facility later this year.

Construction of Berkeley Lab's FLEXLAB should be complete by the end of the year and will provide developers and engineers with a facility that lets them focus on making building materials and the design of buildings safer for the environment.



PHOTO COURTESY: LAWRENCE BERKELEY NATIONAL LABORATORY



# A Click Away From Malware

## When An Innocent-Looking Email Is A Scam

YOU RECEIVE AN EMAIL that looks like it came from FedEx. It is attempting to notify you that your package was shipped to the wrong address. The subject line reads something like “FedEx tracking” or “FedEx item number.” All you need to do to reroute the package is open an attached file (purportedly a shipping form) so you can print it out. This email, however, was not from FedEx, and the attached file was actually malware. It was one of many, sent to entice users into opening the malware-laced file that would compromise their computers.

The FedEx scam serves as a real-life example of common large-scale attacks whereby data thieves and malware script-writers “go phishing” or use other ploys to trick users into opening a file attachment or clicking a Web link in an email in order to deliver their malware. For the data thief who wants to steal information such as credit card numbers and other personal info, email

scams represent an easy way to gain access to PCs and even networks with a low barrier of entry.

Most users know by now to promptly identify messages as spam (click a Spam button, move the message to a spam folder, or take a similar action) when they are obvious scams, such as solicitations to claim money from a Nigerian bank or offers to run free diagnostics tests on their computer. However, attackers are getting craftier and are using more subtle ploys to trick users. Here are some ways to determine the difference between ordinary email and a con job, especially when attackers do their dirty business in not-so-obvious ways.

### ENTER YOUR CREDIT CARD NUMBER HERE

Another scam, similar to the FedEx scam, informed recipients via email that fees must be paid in order to receive a

parcel. All the user had to do was enter a credit card number to pay a small fee in order to resolve the matter.

“With the likes of logistics companies, the message will ask for a parcel number and will then generally state that customs duties or excess postage is required,” says Clive Longbottom, an analyst for Quocirca ([www.quocirca.com](http://www.quocirca.com)). “It then asks for credit card details or some such thing.”

One rule to take away is to never pay for something on a website that is accessed through a link in an unsolicited email, at least not without checking first. “Either phone the company—from a number obtained from their website, not the email—or if you know that this sort of payment can be done through their website, go there on your own steam by typing the address into your browser and looking for your consignment details there,” Longbottom says.

## DON'T TRUST THAT SENDER ADDRESS

After hijacking an email account, attackers will often use the victim's email address to spam contacts and solicit them to click a link or download a file. The scam is crafty since users understandably think they are receiving an email from someone they know or a co-worker who has a company account.

When this happens, a lack of personalization in the body of the email should raise flags. If the email text begins with "Hi" from a friend or "Dear colleague" from a work address, then it is very likely fake. There are other signs to look for that indicate the message was sent from a compromised email account. "If the email looks as if it is personalized but does not have your name in the 'To' field, then it is bogus. If there are no contact details (a proper name along with a matching email and a telephone number), it is possibly bogus," Longbottom says. "If there is a telephone number provided, dial it; don't say who you are or why you are calling if someone answers, but ask them who they are and who they are representing. If they stumble over responses or cannot answer, the email was bogus."

Many users continue to fall for the "your IT department has identified a problem with your machine" message, especially when the sender appears to be from within the company, Longbottom says. "These email messages are always scams of some sort. You often download a virus and then have to phone the company concerned and pay to get it removed."

## ENGLISH USAGE ALERTS

Unfortunately, the use of poor grammar is becoming more prevalent and accepted in business communications. However, there is a big difference between poorly drafted messages and one written in broken English, which often serves as a flag for an illegitimate message, says Joe Malec, a fellow at the ISSA (Information Systems Security Association; [www.issa.org](http://www.issa.org)).



"Links, such as the 'Unsubscribe' link, are a popular way for spammers to validate your e-mail address as well as deliver malware to your system."

**Joe Malec**

fellow, Information Systems Security Association



"The basics for how you verify if a FedEx message or other email is legitimate are the same."

**Brad Kowal**

director of data centers, Shands HealthCare



"At the very basic level, you will never have won money or any prize in a competition that you have never entered."

**Clive Longbottom**

analyst, Quocirca

"Messages that contain spelling errors, missing words, and logical gaps in reasoning should be treated suspiciously," Malec says.

Messages that are designed to look as though they come from a U.S. source, for example, but use British spellings (such as "centre" instead of "center," or "defence" instead of "defense") or vice versa should be viewed as suspect. "Check for the obvious: If the email purports to come from the UK, but has words [with spellings] like 'specialize,' 'color,' and so on, then it's [probably] bogus," Longbottom says.

## REPORT SPAM, DON'T UNSUBSCRIBE

Annoying messages that somehow make their way past the spam filter often claim to offer the recipient the option to unsubscribe from the list by clicking a link. But as tempting as it might be to follow the instructions instead of copying the message to the spam folder, users should take heed.

"Links, such as the 'Unsubscribe' link, are a popular way for spammers to validate your email address as well

as deliver malware to your system," says Malec.

## CHECK THEM OUT

Whenever a user has any inkling of a doubt about an email's origin, tests exist that can quickly and accurately make sure the sender's address is legitimate. This can be done by checking the sender's .com domain. For a link embedded in an email, verification systems such as CentralOps.net can verify the authenticity of a website, says Brad Kowal, a director of data centers for Shands HealthCare in Florida.

"The basics for how you verify if a FedEx message or other email is legitimate are the same," Kowal says.

## GREED IS NOT GOOD

It is common sense for most to ignore certain types of messages, but many users still need to be reminded not to click links or file attachments in email messages that claim to offer the lucky recipient the chance to win a prize or other too-good-to-be-true offers. ●



# Business Software

## The Latest Releases & Updates

WHEN YOU KEEP ON TOP of new and updated business software, you can learn about ways to enhance your business by upgrading or adding to your technology solutions. Our coverage of the latest releases and updates in the world of business software includes products that can help you collaborate, create, and maintain security online. To help you zero in on what's new, here's our latest roundup of business software releases and updates.

### MICROSOFT OFFICE 2013 CUSTOMER PREVIEW

The latest version of Microsoft's popular suite of productivity software, Office 2013, is currently available as a free beta. The Customer Preview gives you access to not-quite-finished versions of Excel, OneNote, Outlook, PowerPoint, and Word, as well as business products that

include Exchange, Lync, Office 365, Office ProPlus, Project, SharePoint, and Visio. And while all the Office applications have undergone cosmetic changes to fit in with Microsoft's colorful Windows 8 square design aesthetic, Microsoft has made some feature-level changes, as well.

**Word 2013** – Microsoft added a few new features that should make reading documents more enjoyable. There is a new Read Mode that automatically formats text into columns, so you can change up your reading experience if you are tired of the traditional Office reading layouts. The Resume Reading feature will bookmark a document so you can pick up where you left off. You can even resume reading the same document on a different device than where you started reading. The Object Zoom tool gives you a close-up view of charts, tables, and other elements.

Word 2013 also offers more collaboration tools compared to earlier versions. For instance, the Present Online tool lets you share documents with others and the Reply Comment tools allows for commenting in real-time, similar to instant messaging (as long as you have an active Internet connection).

**PowerPoint 2013** – Like Word, Microsoft's presentation creator also has the Reply Comment tool for faster feedback, but PowerPoint 2013 has a few of its own new features, as well. The Start Screen has been redesigned to put the new themes and theme variants at your fingertips from the beginning. Alignment guides and merge shapes tools make it easier to line up your elements and pull them together in new and interesting ways. When giving your presentation, you can zoom in on important parts of specific slides, navigate more easily

## ESSENTIAL BUSINESS TECH

### EXECUTIVES, PROFESSIONALS & ENTREPRENEURS

between non-sequential slides, and extend the presentation to a second screen in a snap.

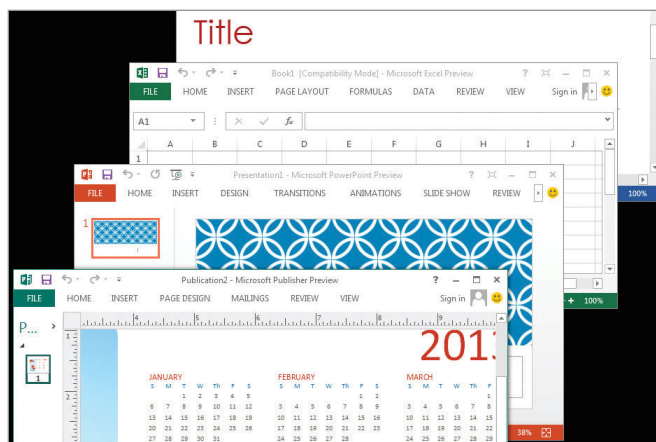
**Excel 2013** – Microsoft enhanced its already feature-packed Excel program with new options for formatting and sharing data. The new Flash Fill feature, for instance, re-formats data quickly and automatically based on whatever pattern you are using. Excel 2013 also includes Recommended Charts and Recommended Pivot Table tools to make it easier to transform raw data into visually appealing information. And the new Excel integrates saving and sharing options for SkyDrive, SharePoint, social networks, and on-line presenting.

**Outlook 2013** – The newest version of Microsoft's email program an improved Navigation Bar, social networking tie-ins, and other additions. Some of its most helpful new features are related to organizing and controlling email and schedules. Peeks lets you view your schedule or information related to the person you're emailing without exiting the message. People Card lets you integrate multiple contacts to avoid redundancy. The Share Your Calendar feature lets others view your calendar, making it easier to schedule meetings and activities.

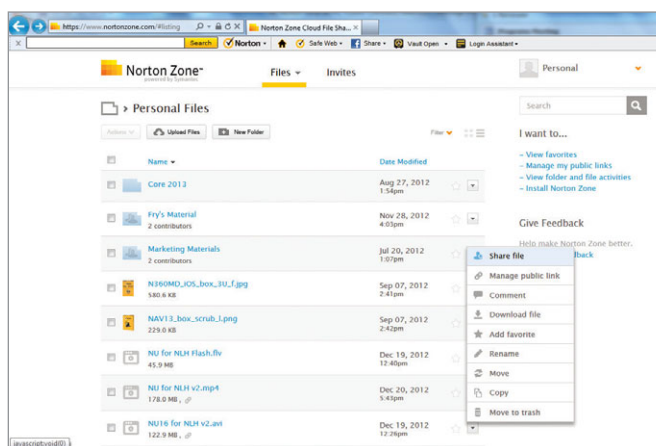
**Office 365** – One of the most significant additions in Office 2013 is the integration of the Office 365 cloud service, which ties together Word, PowerPoint, Excel, Outlook, OneNote, and more to give your files life online. Office 365 brings your projects to almost any Windows 8 device, lets you make documents available in the cloud, brings your social networking connections and other contacts into the Office environment, among other capabilities. With Office 2013, Microsoft is pushing for more online functionality, and Office 365 is just one more example of that.

## SYMANTEC NORTON ZONE

With its new Norton Zone service, Symantec has applied its threat



The Microsoft Office 2013 Customer Preview gives you access to beta versions of Word, PowerPoint, Excel, and other Office programs. Expect subtle design changes and new, helpful features that improve upon previous versions.



Symantec's Norton Zone makes file sharing safer with high-grade encryption, virus scanning, and other security features. Plus, you can decide who has access to certain files and use the service on your computer or mobile device.

prevention expertise to cloud-based storage and file-sharing. Norton Zone lets users securely store files on Symantec-run servers for safe-keeping, collaboration, and sharing via the Internet. New users must sign up for a Norton account to use the service.

Customers can access the Norton Zone service through a Web browser or software installed on a desktop or laptop computer, or through a mobile app installed on a smartphone or tablet. Symantec strove for simplicity and familiarity when designing the various Norton Zone interfaces, so the service is intuitive and easy to use across all supported platforms.

Norton Zone encrypts all of your stored files and lets you determine who can access them. Norton Zone also scans all uploaded and downloaded files for malware, viruses,

and other threats before allowing them to pass. Another helpful feature of Norton Zone lets you share a link with acquaintances; when they click the link, they can safely download the file, regardless of size, and then send file links to anyone, have them click a link, and then safely download the file, also regardless of size, and then allow the link to expire after a specific amount of time.

Norton Zone includes collaboration tools, so you can choose who can access and comment on a file in the cloud. Whenever you log on to view a given file, you'll see any comments from collaborators and have the opportunity to make necessary changes. Norton Zone is currently available as a free beta service at [nortonzone.com](http://nortonzone.com); the full version of the service will be up and running sometime this year. ●



# Man-In-The-Middle Attacks

## What They Are & What You Can Do About Them

HUMAN RESOURCES personnel follow the company's security protocol to the letter. A very strong 15-character password is used to log on to the cloud provider's server through its website. Before sensitive employee data is uploaded to the cloud server, the security software has flagged no warnings about the Web interface. The URL address begins with "https," indicating that either the TLS (Transport Layer Security) or SSL (Secure Sockets Layer) protocol is encrypting the connection. But what the HR person does not know as the data uploads is that a malicious attacker is at the other end of the connection, seeking to broker the information he gathers to identity thieves. The attacker has also received the encryption keys from HR to access other company data on the cloud provider's servers for an even bigger score.

The next day, after attempting to log on to the storage provider's Web

interface and calling to report the problem, the hapless HR employee discovers that all employee records on the cloud servers have been stolen. Because the employee had followed security procedures, there appears to be no take-away lesson from this catastrophe.

### ATTACK MECHANICS

This scenario illustrates one of many possible types of MITM (man-in-the-middle) attacks. In general, a MITM attack involves an attacker who tricks two parties into believing they are communicating directly with each other, when in fact all communications are passing through the attacker. What is particularly tricky about MITM attacks is that there is no evidence of this "middleman" as far as the legitimate users are concerned. Communications look as though they are encrypted, with "https" in the browser URL and security software indicating a protected connection.

"Encryption just means that the pipe is secure," says Bruce Schneier, an independent security expert and author ([www.schneier.com](http://www.schneier.com)). "It doesn't indicate [whom] you are talking to. You could be talking to Doctor Doom."

Other examples of MITM attacks are a keylogger program that intercepts data, or a phishing scheme through which an unsuspecting user uploads sensitive data to a bogus website. However, a common type of MITM attack takes advantage of website vulnerabilities, when an attacker's program passes the authentication test and establishes a connection between two endpoints. A security hole in a website, for example, can be hijacked with a simple Java command or even through HTML text with the help of rogue software to lay the groundwork for the attack.

"A very prevalent type of MITM attack is when someone hijacks a Web connection," says Anton Chuvakin, an

analyst for Gartner ([www.gartner.com](http://www.gartner.com)). "It executes a simple 'view your stocks online' message to you and then executes a 'sell-your-stock-and-then-send-some-money-to-Estonia' command to your bank."

## ENCRYPTION ISN'T EVERYTHING

The main function of encryption is to create virtually impenetrable tunnels through which data transfers can occur. Authentication protocols also play a key role to ensure that the person or computer on the other end of a connection is the right one. But while encryption does indeed secure the connection so that it can be virtually impossible for a third-party intruder to decipher the data without the encryption keys, it does not guarantee authentication protection either, even though that is one of its functions. Still, using encryption as a means to thwart MITM attacks is essential.

"People break in through windows, but you still need to trust door locks," Schneier says. "Encryption will not magically keep you safe, just like a door lock will not magically keep you safe. It



"Encryption just means that the pipe is secure. It doesn't indicate [whom] you are talking to. You could be talking to Doctor Doom."

**Bruce Schneier**

independent security expert and author



"If your browser says the certificate is invalid, then don't go there, especially if it is a sensitive site. That serves as the primary warning that users should look out for."

**Anton Chuvakin**

analyst, Gartner

is a security tool [to use with other security tools]."

## CLOUD WORRY

A MITM attack can compromise financial records, customer or employee information, or other sensitive data, of course. But when all of this data is collectively pooled and uploaded through a single connection to a cloud provider, the potential threat can become very significant. A cloud provider's user interface is very often accessed through a Web connection, making cloud storage even more vulnerable, since MITM attacks largely involve Web browsers.

"If you use the cloud, there is a lot at stake if you lose access to [your cloud data due to] a MITM attack," Chuvakin says. "It is one thing for someone to hijack access to a Web forum, but it is something else altogether to lose access to all of your sensitive cloud data."

## DO WHAT YOU CAN

Beyond watching out for security warnings about invalid certificates and making sure there is an "https" in the URL (indicating a secure connection), there is, unfortunately, little the average non-expert user can do alone to thwart MITM attacks. Some published reports say users should consider the possibility of a potential MITM threat if they notice their computer is running slower than

usual, for example. However, anything from a faulty hard drive to a software glitch could slow down a PC.

Users should also be on the lookout for warnings and alerts from security software that flags unsecured Web pages or connections. "If your browser says the certificate is invalid, then don't go there, especially if it is a sensitive site," Chuvakin says.

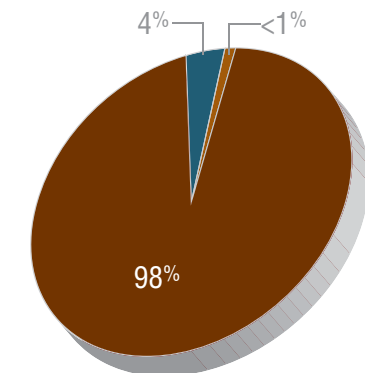
You need to also watch for basic common-sense signs of a MITM or any other kind of attack. "Just paying attention is good," Schneier says. "I mean, if you look at your bank statement and you sent \$7 million to the Russian mafia, [then something is wrong]."

The best an enterprise can do to ward off MITM attacks is to keep software and anti-malware updates current and to make sure that security software and appliances are properly configured and monitored. While MITM attacks can be understood by the layperson on a conceptual level, assessing the intricacies of the attacks and understanding specific vulnerabilities requires the skills and talents of a professional.

"I would hire somebody that knows what they are doing and avoid advice in newspaper articles," Schneier says. "Any specific advice you read about MITM is incomplete and probably wrong, because the subject is too complicated." ●

## ►► Sources Of MITM Attacks

Man-in-the-middle attacks fall under the external agent category, which represent the vast majority of data breach incidents.



- 98% stemmed from external agents
- 4% implicated internal employees
- <1% committed by business partners

SOURCE: VERIZON DATA BREACH INVESTIGATIONS REPORT



# Does Your Company Need An ERP System?

Yes, But The Depth Depends On Your Business

ERP (ENTERPRISE RESOURCE PLANNING) systems are in-depth solutions that cover multiple facets in your company and are designed to simplify business processes and ease the burden on your workforce. "ERP is a term used to describe the software a company uses to run its business on," says China Martens, an analyst with Forrester Research ([www.forrester.com](http://www.forrester.com)) in the area of application development and delivery. "It's a combination of accounting and finance, human resources management, order management, procurement,

project management, and vertical business processes specific to the industry or industries the company operates in."

But having a definition for ERP doesn't necessarily make its importance abundantly clear. Yes, it's a large part of your business, but it's difficult to know what constitutes an ERP system and how you should go about implementing or upgrading one. We'll show you some of the benefits of utilizing ERP and help you determine whether you're company will benefit from implementing a new system.

## YOU MAY ALREADY HAVE IT

If you're asking yourself whether an ERP is necessary for your business, George Goodall, senior research analyst with Info-Tech Research Group ([www.infotech.com](http://www.infotech.com)), has a simple answer: "ERP is essential for companies of all sizes." But you may also be surprised to know that your company more than likely already has a functioning ERP system, even if that isn't what you call it. "Any company or organization that has to manage financials and assets within

### Key Points

Recognize that you may already have an ERP system in place, but you need to make sure that it meets your company's needs.

ERP systems can help automate tasks, ease the burden on your workforce, and help you better manage your company.

Regardless of your industry, you can find an ERP solution specialized enough to complete unique tasks.

Make sure you select the best possible consultant. Even if you choose a good ERP solution, it won't give you maximum benefits without correct implementation.

the enterprise has some sort of ERP system,” says Goodall. “The real issue that people have is that in many cases the systems that people use might be underpowered or lack features.”

As Martens pointed out, an ERP system is essentially the backbone of all of your business processes. Whether you are balancing your books for accounting purposes, keeping track of employee information for HR purposes, or trying to make sure the production floor keeps its schedule, you’re using some form of an ERP system. In fact, simple accounting programs that many small companies use to balance their books are forms of ERP systems. The key is to recognize the benefits of having a dedicated ERP system that goes beyond simple functionality and becomes a management center for your entire operation.

## THE BENEFITS OF GENERAL ERP SYSTEMS

ERP systems are designed to simplify process management for companies and make it easier to operate the businesses themselves. They can often remove the need for manual number crunching and provide the information necessary to make decisions as they happen rather than well after the fact. “In general, a key benefit is the ability with ERP to automate more tasks, workflows, and entire business processes so a company is less reliant on manual data entry,” says Martens. “The goal is to end up with more timely and accurate data within the ERP system, which users can then run reports on to gain insight into the company’s current operations and to help plan for the future.”

In essence, the biggest benefit of an ERP system is that it will improve your company’s stability now and in the years to come. It will improve your organization’s overall efficiency, minimize data entry to free up all-important data man hours for other pressing tasks, and “reduce the amount of time it takes to close books and complete each accounting cycle,” adds Martens. A well-established ERP system will take care of simple processes and specialized tasks.



“Being able to bring together the data generated by the ERP software and then querying that information can assist companies in gaining more insight into their day-to-day operations and give them data to use to carry out what-if planning.”

**China Martens**

analyst, Forrester Research



“A lot of organizations on dated systems will rely heavily on ad hoc business processes. . . . A new system will typically provide better tools for that process management and more control over that underlying data.”

**George Goodall**

senior research analyst, Info-Tech Research Group

## GETTING SPECIFIC

Because companies of all sizes should have some form of ERP in place, it stands to reason that those ERP systems should also be customizable enough to meet the needs of various industries. “There are packages built for every industry that you can imagine, including some shockingly specialized ones,” says Goodall. If you have highly specialized business processes that aren’t present in other industries, communicate with your vendor and implementation partner to ensure those features are present.

## PICK THE BEST POSSIBLE IMPLEMENTATION PARTNER

If you decide to implement a brand new ERP system, the most important decision you’ll make is who you bring on as your implementation consultant. According to Goodall, too often companies will get hung up on who the vendor is or how sophisticated the solution is without putting enough emphasis on their implementation partner. From his findings, most companies cite problems with a consultant more often than they complain about the product itself.

“When we do post hoc analysis and ask people how their implementation went, they very rarely say that we made the wrong technology choice,” says Goodall. “They say that they had problems with their integration partner and the implementation process. They didn’t engage their business leadership enough, they didn’t prepare for the cut-over from implementation to operation well enough, or they didn’t prepare their end users. All three of those really have to be done internally with the help of a consultant.”

Goodall recommends that you choose an implementation consultant at the same time you select your ERP solution to ensure that individual is experienced and capable of installing your ERP system correctly. Martens adds that “a company needs to be very engaged throughout the entire process, particularly if it is heavily reliant on third-party implementers and integrators.” The ERP system you select is important, but if the solution isn’t installed, implemented, and integrated with the upmost care, you could run into huge problems in the future. ●



# Why Tape Remains Relevant

## Cost Savings & Other Benefits Keep Tape Viable

LIKE MANY COMPANIES, it's possible yours takes advantage of tried-and-true tape storage for data backup and archival purposes. According to a 2012 memo from representatives of numerous leading tape providers, however, tape's role is "dramatically expanding," including in the areas of big data, cloud computing, and high-performance computing. "Explosive data growth and shrinking IT budgets are putting pressure on companies to find innovative storage solutions to meet their organizational demands," the memo reads. "Increasingly that means tape, thanks to its significant cost advantages, reliability, and continued innovations improving tape's capacity, speed, and ease-of-use." The following explores

why tape remains relevant today and how companies are using tape.

### THE EVOLUTION OF TAPE

Tape has come a long ways since its beginning. Released in 1952, the first magnetic tape drive for storing computer-generated data was a 935-pound device that stored a mere 2.3MB of data. Further, fewer than 20 companies and organizations were using tape storage that year. Today, tape capacities hit 4TB (roughly 2 million times the 1952 capacity) on cartridges some 900 pounds lighter. Although countless companies use tape now, due to advantages that disk-based storage offers over tape (including speed), some pundits predict tape's time is running out. But is this really the case?

"There certainly is a lot of popular mythology about tape being archaic or dead," says Mike Kahn, The Clipper Group ([www.clipper.com](http://www.clipper.com)) managing director. "Simply put, tape is alive and well and cost beneficial for many uses, mostly in archiving." Although tape is also used for backup, its main use now and ahead is storing valuable data for long durations, he says. Whereas backup is about backing up data and files as a precautionary measure, he says, archiving entails saving data "for a long time and usually at the lowest possible cost per item or per megabyte." Tape remains relevant because it costs significantly less per unit of storage than other storage types while offering "reasonable performance for all

but the most time-sensitive retrieval requirements," Kahn says.

Mike Karp, Ptak, Noel and Associates ([www.ptaknoel.com](http://www.ptaknoel.com)) vice president, believes tape has lost some relevance due to difficulties associated with managing tape media and tape's speed compared to D2D (disk-to-disk) technologies. Still, he says, tape represents a "terrific value" for some archiving solutions where low-cost storage is a chief consideration and speed of recovery is less important. David Hill, Mesabi Group ([www.mesabigroup.com](http://www.mesabigroup.com)) principal, meanwhile, says tape will continue to play a role in backup and recovery as a second- or third-level option due to its cost advantages but also because it offers "biological" diversity. "In providing a different media, tape protects against any systematic problems that might affect disk," he says.

### THE BENEFITS OF TAPE

Among the advantages tape offers over disk storage, Hill says, is that offline tape is "protected from logical problems, such as viruses, that can plague online disk." Tape can also offer energy-related benefits, he says, as tape at rest uses no energy; that is unlike disks that are constantly spinning in a disk array always consuming energy. Hill cautions, however, that "tapes can only be used for certain purposes, and energy savings don't outweigh the business imperatives that often require the use of disk, even though it is less energy-efficient."

Another tape benefit involves its physical makeup. Disk storage involves disk heads that float above spinning platters, while tape heads are stationary and tape moves across the heads in one dimension, Kahn says. Additionally, tape vendors are working on future densities reported to approach 128TB on a cartridge, roughly 32 times what's now available. Disks, meanwhile, might double capacity roughly once every three years or so, he says, and therefore "tape's future seems to be a little more certain than disk's."



"In providing a different media, tape protects against any systematic problems that might affect disk."

**David Hill**

principal, Mesabi Group



Tape may have lost some relevance, but social media "may be the segment that saves tape."

**Mike Karp**

vice president, Ptak, Noel and Associates

What's most important for companies to understand, Kahn says, is the life span of an ATL (automated tape library) compared to that of an all-disk solution. "ATLs will last for decades if maintained," he says. "Yes, you may buy new drives every 3 to 6 years to take advantage of increased densities, but these are modest costs. Tape cartridges clearly can be used for 10 years and likely much longer than that." However, whether scaling up or scaling out, most disk arrays come with a typical three-year warranty, he says, "after which it usually is less expensive to replace the entire array than it is to continue to maintain it at off-warranty maintenance pricing."

Kahn says tape actually can stream data faster than disks, "which is very valuable when bringing back large files." Additionally, it's now possible to store and access files on tape using LTFS (Linear Tape File System) technology, he says. Simply put, this means "each cartridge looks like a mountable file system, with a file index (directory) in a parallel track next to the data tracks. When you mount the cartridge, the index is loaded and discrete files can be accessed directly," Kahn says.

### THE FUTURE

Looking ahead, Hill says, it's possible a new (perhaps holographic or

quantum-based) technology might replace tape, though nothing seems likely to do so "totally within the next decade, at the very earliest." Application-wise, Hill says tape could serve a role in some big data applications that require retaining a lot of data in-house for infrequent sequential analyses of historical data. Tape could also play a big role in cloud computing, he says, "as the last line of defense for backup and disaster recovery, for active archiving where tape-retrieval times are satisfactory, and for deep archiving where you hope to never have to see the data again."

Karp says although big data might offer some opportunities (including long-term storage) for tape, most analytics associated with big data require very rapid input/output, which is tape's weak point. Further, as more analytics associated with big data focus on preemptive vs. reactive approaches, "the ability to stream or otherwise ingest data at the highest possible rate will become more and more important." Social media, however, "may be the segment that saves tape," Karp says. "Governmental regulations and corporate governance typically require most if not all companies to keep track of all messages associated with the business, irrespective of what the messages' original format actually was." Here, tape may provide a long-term value, he says. ●



# Embracing BYOD

## Looking Past The Complexities To View The Benefits

FOR REASONS ENTIRELY understandable, there's a tendency for companies to focus the majority of their attention on the complexities, hurdles, and obstacles they must surmount in order to implement a BYOD (Bring Your Own Device) policy within their workplaces. What often gets lost in such discussions concerning a company enabling its employees to bring their consumer mobile devices into the office are the various ways that BYOD will actually benefit the company.

The following highlights some of the ways in which adopting a BYOD policy can prove advantageous to your company and its IT department.

### BENEFITS OF BYOD

One reason that complexities tend to eclipse potential benefits in BYOD policy-making discussions is simply that BYOD remains a relatively

new phenomenon industry-wide. Christian Kane, analyst for enterprise mobility, infrastructure and operations, at Forrester Research ([www.forrester.com](http://www.forrester.com)), says because BYOD issues are difficult in nature, as well as still evolving, "it's understandable complexities have overshadowed the benefits to date." Kane, however, believes this situation will change as "people get more comfortable and educated on BYOD and the various technologies involved evolve."

The bottom line, he says, is that "BYOD is happening, and so I think the real heart of the conversations are twofold: First, how do we do this as responsibly as possible, and second, how do we maximize the benefits?"

Another reason that benefits tend to fall by the side is that there's no certainty that many will even come to fruition. For example, the

company saving money is a possibility after it introduces BYOD, but cost savings require other mobile enablement-focused investments, such as investments in mobile applications, Kane says.

Rob Enderle, president and principal analyst of Enderle Group ([www.enderlegroup.com](http://www.enderlegroup.com)), meanwhile, says a benefit of BYOD is that it enables users to "choose the tools that they feel will best work for them and opens up avenues of productivity in locations where traditional PCs wouldn't work." Further, BYOD offers the benefit of making workers more responsive and more mobile.

### THE BYOD-IT DYNAMIC

Among the gains of implementing BYOD, some that are frequently glossed over or not addressed at all are those related to the IT department, the unit typically charged with

tackling a lion's share of BYOD-related tasks before and after implementation. As Enderle says, discussions concerning a company embracing BYOD can "put IT and users at cross purposes." Embracing BYOD, however, can result in "less aggravation between IT and users, and users who take far better care of their personal productivity hardware," he says.

Kane considers the most important benefit regarding embracing BYOD to be the transformation it can cause as IT becomes more focused on people rather than on devices. "BYOD programs will make it much easier to start thinking about the IT organization as a service provider/integrator," he says. While many concerns related to BYOD are still under consideration, Kane says, one of the most interesting issues is that BYOD "really forces IT to stop being device-centric in their support philosophy and start being much more user/application-centric. The device shouldn't be the primary factor here; it's about helping people get their jobs done."

Overall, the benefits of adopting BYOD are "mostly focused on IT not wasting time on fighting this evolution and instead focusing on enabling it," Kane says. For example, BYOD can lead IT to stop focusing on device 'break/fix' issues and letting someone else address such problems so that it can instead use "that energy to figure out exactly which apps and data the users need to access on these devices."

## FINANCIAL BENEFITS

Arguably, finances is one area where benefits get their fair share of the limelight in BYOD discussions. For many companies, a major motivator for even considering BYOD is the notion that doing so can save money. The idea here is that cost savings can derive from fewer device



"[The] challenge with BYOD is that the majority of the benefits are still in the 'potential' category."

**Christian Kane**

analyst, enterprise mobility, infrastructure and operations,  
Forrester Research



"[BYOD] can make the firm appear more cutting-edge [and the company's employees] more knowledgeable about events that happen after hours or while they would typically otherwise be disconnected."

**Rob Enderle**

president and principal analyst, Enderle Group

purchases, reduced device usage charges, and fewer lost and damaged mobile devices due to employees using their own. Elsewhere, Enderle says, benefits include "a reduction, or elimination, of capital expense for related personal computers, less desktop service costs (picked up by the retailers, carriers, or other employees), and the potential for lower software licensing costs (depending on what is used)."

Another primary cost-related benefit is that employees armed with their own devices will be more productive. Some BYOD experts, however, have noted there's been a shift in thinking among companies on this point, as user satisfaction and device enablement are taking precedence over saving money.

Kane says the problem with associating financial benefits with BYOD is that many companies haven't "really defined what a BYOD program actually means and often confuse mobile enablement of the workforce with BYOD." Essentially, he says, because so many firms are attempting to embrace new devices, add mobile applications, and support new platforms while also creating a BYOD program, the costs of all these entities often are lumped together.

Mobile enablement, Kane adds, requires a significant investment (mobile device and application management tools, internal app stores, mobile apps, etc.) because such enablement "really means transforming your business."

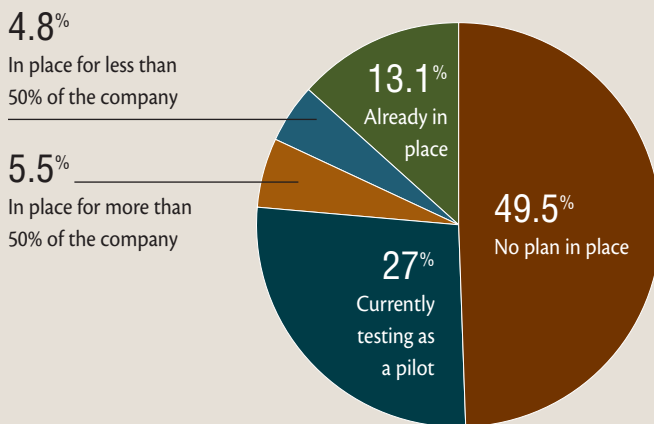
BYOD can result in cost savings, but Kane recommends thinking of it as "cost/resource redistribution." He adds, "Let IT focus on more important things and invest that money which would have been spent on devices and device support on apps and app support."

## RECRUITING & REPUTATION

A related benefit that can pay considerable dividends long-term is the positive influence adopting a BYOD policy can have on the company's reputation and ability to recruit modern, tech-savvy employees. BYOD, Enderle says, "can make the firm appear more cutting-edge" and the company's employees "more knowledgeable about events that happen after hours or while they would typically otherwise be disconnected." BYOD can also help a company appear more employee-friendly, as well as make it "easier to get top talent particularly out

## ►► IT Faces BYOD Concept With New Policies

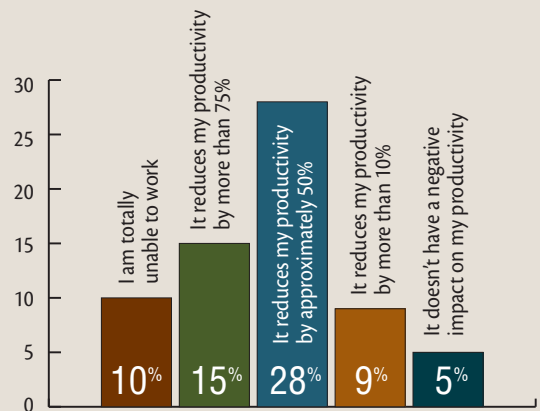
Many businesses are facing the challenge of the consumerization of IT, especially as more and more workers bring their personal devices into the workplace. A 2012 IDC report revealed that numerous organizations are planning to construct BYOD (bring your own device) policies through the end of 2013. Specifically in Australia and New Zealand, IDC found that nearly half of all businesses reviewed do not currently have a BYOD plan in place, but CIOs and IT managers are feeling the pressure to adapt. The following breaks down the BYOD plan deployment among CIOs and decision makers in that region:



## ►► Report Says Wireless Is Key To Mobile Success

A 2012 iPass survey of 1,689 mobile workers located primarily in North America (50%) and Europe (33%) found that frequently traveling and “always on” workers are increasingly psychologically attached to their mobile devices, BYOD (bring your own device) policies are showing up in more and more organizations, and most feel that working remotely is a necessity (62%) or even a right (7%). Here are some additional findings.

### Without wireless, respondents claimed:



of school,” he says. Of all the gains a company can realize in adopting BYOD, Enderle considers the “ability to attract better employees” as having the greatest overall measurable impact.

Kane says younger and new workers entering a company just expect that they can use their consumer devices. They aren’t asking if the practice is allowed, he says, “they’re just doing it.” The same can be said “for employees from all age groups really, but it definitely can give a company the perception of being progressive and in tune with their employees, customers, and partners,” he says. Because BYOD is such new territory and many companies are struggling with it, BYOD can also indicate to those outside the company that “the company doesn’t think of

business and technology as two different things, but they need to be one to enable success,” Kane says.

## WHEN BENEFITS AREN'T ENOUGH

As happens with the introduction of any new initiative, BYOD offers potential short- and long-term benefits. It’s possible, for example, a company will quickly see happier employees after introducing BYOD. “The actual productivity benefits and service-cost reductions take a while to work through the system,” Enderle says. Kane says part of realizing long-term benefits is mental, while another part is “aligning IT with business objectives.”

For some, potential gains from BYOD don’t outweigh the various complexities involved with

constructing, implementing, and maintaining a BYOD policy. One example where this can be true, Enderle says, involves the security of mobile devices, as mobile devices in general “aren’t particularly secure.” Thus, in industries where security is a high concern, BYOD “may represent an unacceptable risk,” he says.

Similarly, Kane says for heavily regulated firms BYOD can be extremely challenging, as regulations and legal challenges can often inhibit the program. “The real heart of the BYOD program,” he says, “is being able to identify who this is appropriate for and who it isn’t in the same way that companies need to really look and see who a tablet might be appropriate for and who won’t realize benefits from it.” ●



# Collaborate Without Losing Control

## Balance Worker Productivity & Data Concerns

As Brad Shimmin, Current Analysis ([www.currentanalysis.com](http://www.currentanalysis.com)) principal analyst, says, having data that travels with you is “an integral component of the modern workforce.” Increasingly this means modern employees want to work as efficiently and easily as possible using the devices they want, accessing data wherever they are, and collaborating and sharing with others as needed. This includes using Web-based collaboration and sharing services. For companies, however, the productivity that such services pro-

vide workers typically means relinquishing at least some control over company data. The following explores how businesses can go about enabling online collaboration and sharing without losing excessive control of their data.

### THE “PERSONALIZATION” OF IT

Users’ reliance on mobile devices has significantly altered how IT must manage and control company data. The trend is often referred to as “the consumerization of IT,” but Cheryl McKinnon,

Candy Strategies ([www.candystrategies.com](http://www.candystrategies.com)) president, says a better term is “personalization of IT.” In the context of technology and data, she says, “consumer” elicits the notion of “receiving without contributing,” which is the opposite of what the trend represents.

“Ultimately, what we’re seeing is the increasing level of technical comfort and savvy among regular business users,” McKinnon says. “Tech, digital photography, apps, Web, mobile, Web content, or blogging platforms are no longer the domain of the geek but of

### Key Points.....

Web-based collaboration and file-sharing services generally result in more productive workers but less company control of data.

Many businesses are aware of associated risks but not necessarily how many online collaboration and sharing services there are and how pervasive usage is.

Content management (including mobile device management) solutions are increasingly including collaboration and file-sharing tools.

Companies should set clear and effective guidelines concerning usage of online collaboration and sharing services and what company data can be shared, with whom, and how.

nearly everyone.” As such, information workers are growing increasingly impatient “wondering why they need to settle for clunky, outdated, unintuitive systems and interfaces when things are so much easier at home,” she says.

Christian Kane, Forrester Research ([www.forrester.com](http://www.forrester.com)) analyst, says that in the past an employee’s first smartphone or computer was oftentimes a company-issued device; therefore the company essentially dictated the initial experience and expectations. Now, consumer products set expectations far more often than the company does. Further, Kane says, IT has essentially become a competitor in contrast to consumer channels, so IT must start thinking about how it delivers services, the quality of service it provides, and what the user experience is like. “IT basically can’t dictate what a user installs in a BYOD scenario, so they now have to focus a lot more on how they deal with data and applications,” he says.

### HOW AWARE ARE YOU?

In terms of consumer Web-based collaboration and file sharing services, companies are generally aware of the risks involved with employees uploading and sharing company data online. Companies experienced a similar situation previously in terms of employees using floppy diskettes, thumb drives, and other portable media to transfer company data, Shimmin says. What companies may not realize is how widespread the adoption of cloud-based storage and sharing services has become and how many services there are, he says.

McKinnon says although IT or records management departments may possess a bit of denial about



Companies and employees recognize they’re operating in “a client-agnostic era in which it does not and should not matter what piece of hardware you’re sitting in front of or holding in your hands.”

**Brad Shimmin**

principal analyst, Current Analysis



“What can be shared, with whom, and where—[these] are important to outline and may vary from department to department.”

**Cheryl McKinnon**

president, Candy Strategies

the pervasiveness of consumer device usage among employees, the degree of risk can vary dramatically among organizations depending on the content workers are uploading/sharing. Overall, Kane says, cloud-based storage services pose a huge challenge to companies because they target consumers and offer business benefits yet provide companies with no insight into or control over the data stored there.

Shimmin compares the situation to employee use of instant messaging apps years ago. IT found itself needing to adopt an internal solution that either blocked such traffic or managed, governed, and secured it. Ultimately, the latter solution won out. “I think we’ll see that exact same sort of trajectory with file sharing, which companies may initially decide to block such traffic to ensure there aren’t any issues, particularly if they’re in a sensitive industry,” Shimmin says. Ultimately, though, Shimmin believes governance and

management solutions, including MDM (mobile device management) solutions “strictly aimed at taking care of this problem” will win out.

### ALLOWANCE WITH CONTROL

Where online collaboration is concerned, there is a growing number of alternatives to consumer options that enhance worker productivity but help prevent excessive loss of company data. Such solutions provide controls to disable downloads, securely share data outside the company realm, and perform auditing, Kane says.

Ultimately, McKinnon says, a company’s mentality toward collaboration/sharing should be to ensure that IT is serving the needs of frontline business workers. “If workers are self-provisioning their own cloud, Web, or mobile apps for file sharing and collaboration, clearly there’s a gap in what their in-house IT teams have provided,” she says.

In terms of consumer Web-based collaboration and file sharing services, companies are generally aware of the risks involved with employees uploading and sharing company data online.

"Tools may be too complex, too expensive, hard to use with external parties, or simply not well promoted or advertised internally," McKinnon says. Fortunately, a rich set of options has emerged in recent years with a bigger range of tools suitable for all types of budgets and platforms, she adds.

## WEIGH THE OPTIONS

Exactly how companies should go about enabling online collaboration and sharing can vary. One option is creating and managing accounts for employees. This might be feasible for smaller companies handling low-sensitivity data, McKinnon says, but likely more problematic for larger enterprises due to consistency and the need to establish guidelines for securing, deleting, and sharing content. "Scattered repositories of content can present risk when employees leave, passwords are forgotten, and information can't be found or trusted to be accurate," she says. Risks potentially can turn into lawsuits, audits, fines, and sanctions.

Another option is acquiring a content management solution with built-in collaboration and sharing features. McKinnon says most organizations should at least investigate



**"Again, employees aren't breaking guidelines just to break them; they're doing it to get their jobs done."**

**Christian Kane**

analyst, Forrester Research

point; he says, "The most important piece here is understanding what the employees' requirements are."

Solutions available include intuitive, enterprise-aimed SaaS (software as a service, or cloud software) models, which are gaining strong market momentum, McKinnon says. Other possibilities include open-source alternatives suitable for companies that prefer on-premises Web-based file sharing. Elsewhere, larger, long-established content-management vendors are augmenting their product suites, she says.

Beyond file syncing and sharing, a good solution should enable employees to create and manage team libraries and individual accounts and share with customers and others outside the company. Important abilities for IT and management include download control, auditing, mobile and Web UIs, offline document support, security settings to restrict access, and tag and search support.

data deemed discoverable in cases of litigation or audits.

## USER GUIDELINES

Whatever path companies take, outlining employee expectations regarding usage of services and company data is advisable. Guidelines should make clear the types of content subject to security, privacy, and other regulations, McKinnon says, as well as detail how data must be protected. "What can be shared, with whom, and where—[these] are important to outline and may vary from department to department," she says. "The risk is likely low for a graphic designer when sharing a brochure mock-up with a marketing agency but can be high when corporate legal counsel is sharing contracts with their external law firm." IT and compliance teams, meanwhile, should define data that is confidential and subject to regulations or other non-disclosure policies.

Kane says while effective guidelines are a great starting place, "where there's a will there's a way." Companies should focus on keeping data secure and motivating employees to use tools correctly. "The best motivators are experience, ease of use, and of course something that meets their needs," he says. "Again, employees aren't breaking guidelines just to break them; they're doing it to get their jobs done. If your top sales performer every quarter uses all her own technology, the business leaders aren't going to tell that person to stop," he says. "This is why we see an increasing number of companies looking to understand why employees use the tools they do and deliver around those needs." ●

**"Getting input from the frontline workers on how they need to share information, with whom, and why will be useful when developing the requirements to meet common use cases . . .**

this option. "There's a much broader range of tools on the market today to address all levels of budget and need—including free, 'freemium,' open-source, and SaaS," she says. "Getting input from the frontline workers on how they need to share information, with whom, and why will be useful when developing the requirements to meet common use cases." Kane concurs on this last

SLAs, McKinnon says, should outline what happens to deleted documents, how documents can be downloaded upon contract termination, uptime and availability parameters, and timelines concerning bug fixes. Regulated industries might require commitments on data sovereignty, adherence to security standards, identity management, and procedures to request



# Tablet Specs

## What's Good For Business?

TABLETS ARE BECOMING as much a part of the business world as smartphones or laptops. Not only does their processing power approach that of full-size computers, tablets are also portable enough to be taken almost anywhere and vendors are adding new features and applications every day. As a company looking to purchase tablets for employees or an individual businessperson wanting a tablet for both personal and business use, it can be difficult to sort through the various feature sets and understand exactly how different tablet models compare. We'll show you what features to look for and help you choose the right tablet for you and your business.

### CONSTRUCTION

If you have employees who are working in potentially hazardous environments, you may want to

invest in ruggedized tablets that are built to withstand intense conditions. But for most businesses, a simple case is enough to protect the outside body and internal components. Manufacturers also use different types of glass for their screens, including special types of highly scratch- and shatter-resistant glass. You may want to opt for a tablet with an extra-durable casing or one that is much more responsive to touch controls depending on how your employees will use it.

### SIZE

Tablets range in size from approximately seven inches up to 13 inches

or more. But when a size is displayed in a tablet's name or in its product description, the manufacturer is most likely referring to the diagonal length of the screen and not the entire device. The bezel and frame around the screen will sometimes add a half or full inch to each side. Smaller tablets are great for portability and catching up on reading, but tablets with larger displays can be used for videoconferencing or other purposes.

### SCREEN

In addition to the screen's physical size, consider its resolution. The resolution essentially tells you how sharp images will be. It can affect

You may want to opt for a tablet with an extra-durable casing or one that is much more responsive to touch controls depending on how your employees will use it.

video playback quality as well as the look and feel of applications. If you put a premium on visuals and image quality, look for a tablet with a higher resolution.

## PROCESSOR

A device's processor also has a large effect on the overall tablet experience. With a fast processor, your tablet will be able to handle more

ments, videos, images, and other files, as well as the tablet's operating system. Tablets come with some storage onboard (typically 8GB, 16GB, 32GB, or 64GB), and some offer expandable storage with the availability of an SD memory card slot. Note that even if a tablet claims to have 16GB of storage built-in, the OS and system settings often consume a few gigabytes of that.

Some tablets aren't designed with high-quality video playback in mind and are instead meant more for document viewing and Web browsing, while other tablets employ powerful graphics processors specifically designed for movies, games, and other media.

demanding apps and the experience should feel smoother. Much like a desktop or laptop computer, the higher the tablet's clock speed (measured in gigahertz), the better its performance will be. Also, dual-core processors handle computing tasks better than single-core processors, and quad-core processors are better still.

## MEMORY

RAM (random-access memory) works hand in hand with the processor to help run applications on your tablet. A tablet's processor uses RAM as a cache. A tablet with more RAM can keep more data in memory at a given time and will therefore provide better performance, quicker read and write speeds, and a swifter overall experience.

## STORAGE

The terms "memory" and "storage" are often used interchangeably, but they usually refer to two different things. As we have discussed, memory, or RAM, is used for short-term storage and affects performance. Storage capacity, on the other hand, is the amount of space available on a tablet for holding your apps, docu-

## BATTERY LIFE

The battery life of tablets varies wildly from one device to the next. Some manufacturers place a great deal of emphasis on battery life so you can watch videos and search the Web for 10 hours or more on a charge. But other tablets can only provide around five hours of life per charge. Battery life also depends on usage, with constant video viewing or wireless connectivity attempts pulling much more power than working offline or occasionally checking email. Also keep in mind employee travel routines, as spending long stretches without access to a power outlet can adversely affect productivity if the tablet's charge frequently fades or runs out.

## AUDIO/VIDEO

Some tablets aren't designed with high-quality video playback in mind and are instead meant more for document viewing and Web browsing, while other tablets employ powerful graphics processors specifically designed for movies, games, and other media. In terms of audio quality, most built-in tablet speakers won't stand up to a set of external speakers

or headphones. So, if you need high-quality audio, you may need to invest in a separate accessory. Also check for the presence of a microphone if you need one.

## CAMERA

Most tablets have a camera built-in, but the image quality will ultimately depend on the megapixel count. For instance, some devices have 1.3MP front-facing cameras that are only good for basic videoconferencing, but others have 5MP or larger cameras designed for taking much higher quality photos and videos. For now, you may not get the same quality from a tablet as you might from a smartphone or point-and-shoot camera, but you'll still be able to take decent pictures if you find a tablet with a relatively large-megapixel camera built-in.

## SECURITY

Almost all tablets will have some form of password protection built-in so you can lock your screen and prevent access to apps and data. But if your company's employees will need to access sensitive data via tablet on a regular basis, look for features such as hard drive encryption the availability of additional security apps. Some apps even allow you to remotely lock or wipe a tablet in the event that it becomes lost or stolen.

## SOFTWARE

When it comes to software for tablets, the sky is the limit. You'll need to choose an operating system that will integrate smoothly with your corporate network and has the built-in features you need, but the most popular operating systems support a wide range of business applications, including calendars, to-do lists, and word processors. Physical aspects of a tablet are important when comparison shopping, but if you can find the OS that meets your needs and supports the best available apps, you can unlock your tablet's full potential. ●



# Get Your App To Market

## From Concept To Distribution

THESE DAYS MANY companies are opting to develop their own applications in order to better serve customers or to meet specific internal needs. You could, for example, build an out-facing app that improves communication between your employees and customers. Or you could create a more in-depth application that helps administrators monitor your company's network or data. If there is an unmet need in your company or even in your industry as a whole, it can make sense to make your own application to solve the issue. We will highlight what it takes to get the job done.

### FOCUS ON THE IDEA

Of course, every app starts with an idea, which usually grows from recognizing that a process for getting something done is either lacking or could be improved. If you think an app could help, there are numerous specifics to

consider before embarking on the app-building process, but first you should document what the app will do in its entirety. It might be easy to write down a sentence or two about the app and deem the idea solid, but more is needed: Draw out the idea to all imaginable conclusions, using a whiteboard for diagramming if necessary, to ensure the app's full scope is understood at the outset.

### DEFINE YOUR AUDIENCE

Identifying an audience for your app should be implicit when you draw out the overall app idea. Broadly speaking, an intended audience is either internal (company employees) or external (customers or others outside the company). However, as sometimes happens, you may find throughout the development process that an app designed for internal purposes could be useful for people outside of your company

or customer base, or vice versa. So be prepared to adjust the app's scope during development.

### DETERMINE THE NEED

Before you begin the development process, search the online app stores serving various mobile platforms and consult the vendors your IT department works with to determine whether an app offering similar functionality already exists. If you are considering a consumer-facing app, compare your app concept with any similar apps to make sure a market exists for your product. If an internal app is what you have in mind, make sure a vendor doesn't offer an app that could be adapted to your company's needs with the vendor's help.

### CHOOSE PLATFORMS

A potential deterrent to building an app in-house could relate to your choice

of platform. If you are building for one platform, such as iOS or Android, then your in-house team might be able to handle the programming, testing, and debugging needs of the app. But, says Altaz Valani, senior research analyst at Info-Tech Research Group ([www.infotech.com](http://www.infotech.com)), “if you’re thinking about spreading across multiple platforms and devices, then the best approach is to consider an abstraction of the whole mobile space, and there are third-party companies that do that.”



“Mobile consumers are really savvy. They are actually de facto expecting certain criteria, like usability, scalability, and portability. All of that is kind of a given within an app. You can’t be thinking in a single dimension anymore. You have to think on two dimensions. We’re talking about both a vertical and a horizontal development strategy.”

**Altaz Valani**

senior research analyst, Info-Tech Research Group

## PREPARE FOR MULTIPLE DEVICES

Preparing your app for use on certain device types doesn’t always end with choosing one or more platforms. “You need to get out of the mobile-only mindset,” says Valani. “You can use mobile to get into the marketplace, but everything is connected and everything is a potential device. Be prepared to expand beyond mobile. Users are now looking for integration with their tablets and with their desktops, so you have to service that need. You have to keep all of these branches synchronized at all times.”

## BUILD THE APP

If you feel confident that your idea for an app is worth pursuing and all of the targets—processes, audience, platforms—are nailed down, the next step is to build it. Your company may have developers on staff who are experts at app building, or some training might be necessary to get on-staff developers up to speed regarding specific mobile platforms. But if your workforce lacks any of the necessary technical know-how, it’s often a good idea to enlist the services of a third-party vendor. Ultimately, ensure that whoever develops your app can execute on the overall vision, as buggy or otherwise

problematic apps invariably draw unwanted negative attention.

## TEST & RETEST

After developing a minimum viable product version of your application, perform limited testing internally and use the resulting feedback to build a more stable version. If, after that, you feel comfortable with the current state of the app, then you should start casting a wider net for testers. After testing with a relatively small set of users, consider initiating a beta test with a wider audience before releasing the app for regular use.

## SUBMIT FOR DISTRIBUTION

For external apps, it will be obvious which marketplaces to submit your app to if you built it for specific platforms. The curating process varies; roughly, the Apple’s iTunes Store is most stringent, Google Play is the least, and Microsoft’s Windows Phone is somewhere in between. If you created the app for multiple platforms, it’s simplest to start the curation process with the Android version.

## SELL THE APP

If you built your app with the intent of generating revenue, then you’ll

need to set a price point after you’ve selected an app marketplace. According to Valani, there is a threshold where most apps “are 99 cents to three dollars.” Less expensive apps can lead to more sales or even impulse purchases, but if you believe your app has a large enough feature set to warrant a higher price, you can always go beyond the threshold. Valani also adds that lower priced apps make it so “you’re being driven primarily by volume.” But if your app can fill a particularly large need, then you may be able to make up the difference in total revenue.

## SUPPORT THE APP

The development process isn’t over as soon as the app hits the marketplace. You should regularly check in on customer reviews or employee feedback to determine whether you need to change the app through quick updates or make wholesale changes in a future version. “Buggy and slow applications just won’t survive,” says Valani about external apps. “There’s a very low barrier where if the app doesn’t do what I need to do, it’s gone. You need constant updates and to consider things that are really important to your users, such as performance, scalability, bug fixes, and security. The moment you start to get things that aren’t working correctly, you open the opportunity for a competitor to get in there and create an app that actually offers that.” ●

**If you feel confident that your idea for an app is worth pursuing and all of the targets—processes, audience, platforms—are nailed down, the next step is to build it.**



# Understanding Rugged Devices

## How To Decipher The Specs

DROPPING A LAPTOP OR TABLET on a hard floor or in a body of water is usually something to avoid. But some enterprise users need rugged devices that can withstand such abuse and other harsh treatment in order to do their jobs.

While expensive, rugged devices can pay for themselves thanks to their long life cycles, even while undergoing harsh use that would destroy a standard unit. A forklift operator who needs to upload inventory data throughout the day in a warehouse, for example, might require a tablet that can withstand the shock when it is dropped on a cement floor.

An indication of whether a device can withstand harsh physical treatment is its IP (Ingress Protection) Rating, published by the IEC (International Electrotechnical Commission; [www.iec.ch](http://www.iec.ch)),

and the United States Military Standard that vendors usually list with their rugged device product specs. While the product ratings are not independently tested, think of them as detailed manufacturing claims about how well devices might be able to hold up in tough environmental conditions. In this way, the ratings offer crucial information during the buying process.

"Companies need [IP and military spec] ratings because they definitely help with their buying decisions," says Christian Kane, an analyst for Forrester Research ([www.forrester.com](http://www.forrester.com)). The specs "are obviously important because [businesses] are often going to spend a large amount of money on not only a single device, but on a fleet of rugged devices for a segment of their workforce."

But to interpret the ratings, it is necessary to understand what they mean. Deciphering what "IP45" or "MIL-STD-810C method 514.2" indicates in a product spec document, for example,

### ►► Selection Criteria

These are the top five mobile device selection criteria among enterprises, in order of importance, as reported by VDC Research ([www.vdcresearch.com](http://www.vdcresearch.com)):

- Battery life
- Broadband wireless functionality
- Price
- Total cost of ownership
- Device weight and ergonomics



**“Companies need [IP and military spec] ratings because they definitely help with their buying decisions.”**

**Christian Kane**  
analyst, Forrester Research



**“People often wonder if they can get away with using a [cheaper, non-rugged device]. But if a workflow gets disrupted because a device fails, you end up spending a lot more than what it costs to replace the device.”**

**David Krebs**  
vice president, mobile and wireless practice, VDC Research

can seem daunting to those unfamiliar with the nomenclature. However, the ratings are relatively straightforward to interpret when you know what they represent.

## WHAT THE RATINGS MEAN

For IP ratings, vendors typically list two numbers, which relate to dust and water. A rugged laptop that can withstand continuous heavy layers of dust and that can withstand heavy contact with water, for example, might have an IP rating of IP66.

The first number, which represents dust protection, ranges from zero to six. A zero rating means the device is unprotected against any kind of particle contact. A rating of six means the device is protected against the ingress of all particles, including dust.

The second IP number, for water protection, ranges from zero to eight. This number identifies how well a device can withstand water contact. A zero rating means the device is unprotected against any kind of water contact while a rating of eight indicates the device can continue to function when submerged in more than a meter of water.

Compared to IP ratings, the U.S. military rating system includes a wider range of environmental-resistance specifications. A vendor may list more than a dozen military spec testing methods and standards for a product, which

might include resistance to vibration, impact, humidity, shock, temperature, and other standards.

Military specs also include detailed descriptions about how tests are carried out. Testing controls, methodologies, and units of measurement are detailed. IP ratings, on the other hand, indicate the environmental conditions that a device can withstand relating to dust and water but do not offer information about specific testing procedures.

It is sometimes unnecessary to look up the testing specifics for the military spec ratings in the MIL-STD-810C document because vendors often list and describe the tests used to obtain the measurements in their product spec sheets. The vendor descriptions can serve as a good summary of the different tests and overall ratings, but the MIL-STD-810 military spec documents offer a more comprehensive overview.

## RATINGS AS REFERENCE POINTS

Although the IP and military specs serve as seemingly objective standards, vendors still have some leeway in how they rate their products. A vendor might design a device that it says meets certain IP and military standards, for example, without actually testing it. Despite the U.S. military's attention to detail in its MIL-STD-810C document, it is still nearly impossible to duplicate the exact

testing procedures that the military uses, which can lead to an inflated rating.

Manufacturers also are not legally obliged to have their rating tests verified by third parties. IP and military spec ratings that vendors communicate thus serve more as good reference points for specifications that reflect manufacturers' claims than they do as guarantees of quality.

In many ways, military and IP spec ratings should serve as a starting point during the rugged device selection process. Enterprises need to first carefully gauge the features they need in a rugged device, such as the ability to withstand shock, vibration, or extreme temperatures. Once a group of devices has been shortlisted based on how their specs offer a good fit on paper, an enterprise needs to perform its own tests in-house to see if a product lives up to the manufacturer's rating claims. It's also important to test whether a particular device can integrate with the corporate network and otherwise meet the company's and users' needs.

## THE PRICE TO PAY

Sometimes enterprises may be impressed by how well a certain device meets a vendor's IP and military standard product claims during its in-house tests but less impressed with the price. They may be tempted to save costs by buying a less expensive laptop or tablet knowing that users can damage three or four of the devices for the price that it would cost to replace a single rugged unit. However, price considerations are not only measured in replacement costs.

“People often wonder if they can get away with using a [cheaper, non-rugged device]. But if a workflow gets disrupted because a device fails, you end up spending a lot more than what it costs to replace the device,” says David Krebs, senior vice president for the mobile and wireless practice at VDC Research ([www.vdcresearch.com](http://www.vdcresearch.com)). “You spend a lot more than just replacing the device, due to lost operational costs, lost revenue opportunities, and customer service issues.” ●



# Smartphone Tips

Power-Saving & Streamlining Advice

## WINDOWS PHONE

### STOP LOADING MOBILE WEBSITE VERSIONS

► One of our pet peeves is being forced to accept mobile versions of websites. One of the reasons to have a modern smartphone is it has a full-featured Web browser that can easily handle standard versions of websites. But even after you make your selection, many websites continue to force the sometimes difficult-to-navigate mobile versions of their sites on you.

You can stop the insanity by selecting Settings, Applications, and Internet Explorer. Tap to change from Mobile to Standard browser.

### CLEAR BROWSER SEARCH HISTORY

► There are many reasons to delete the search history from your Windows Phone 7 smartphone. They can range from protecting corporate secrets to hiding the embarrassing results of a seemingly innocuous search phrase.

No matter the reason, deleting search history is a snap. Bring up Settings, then tap Applications, Search. Tap the Delete History button, and the evidence will be history.

### ADD WEBSITE BOOKMARKS TO THE START MENU

► Windows Phone 7 has a handy feature that lets you pin items to the Start menu, similar to pinning items to your desktop computer's Start menu. What seems to have escaped the notice of many Windows Phone 7 users is that you're not limited to adding apps to the Start menu; you can also add URLs.

If you routinely visit certain websites, it can be a lot easier to get there from the Start menu than to launch your browser and then select the links from your browser bookmarks.

To add a Web page to the Start menu, launch your browser and navigate to the Web page you wish to add. Drag the menu into view by using the ellipses (. . .), and select the Pin To Start option. You can give the Web page a name or use the name provided.

The next time you access your Start menu, you'll find the Web page listed for quick access.

BLACKBERRY

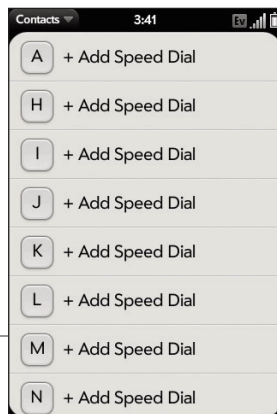
## CHANGE SPEED DIAL SETTINGS

► If you set up a speed dial number that you no longer use, it's simple to reassign the shortcut to a new number. Start by pressing the Send key from the Home screen, then pressing the Menu key. Select View Speed Dial List, scroll to and highlight the speed dial entry you want to change, press the Menu key, select Edit, scroll to and select a new contact, confirm the number you want the Speed Dial to call, and then press the Escape key twice to return to the Home screen. You can also just press the Delete key to unassign the speed dial. Now, simply long-press the speed dial key to dial the number.

You can also shuffle your speed dial list by pressing the Send key from the Home screen, pressing the Menu key, selecting View Speed Dial List, scrolling to and highlighting the speed dial entry you want to move, pressing the Menu key, and selecting Move. Now, just scroll with the contact number and press the trackpad when you've found a new place for it. Press the Escape key twice to get back to the Home screen.

Note, the A, Q, and W keys will lock the phone, change the profile to silent, and call voicemail when long-pressed from the Home screen, respectively. Therefore, they cannot be used as speed dial keys.

Choose a letter from this screen to assign a speed dial shortcut.



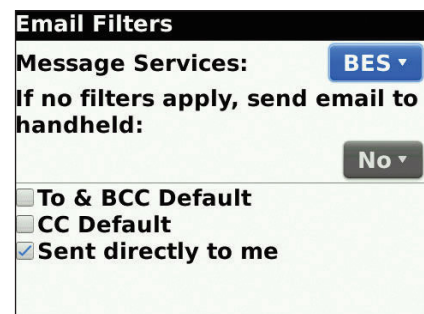
## BATTERY SAVING MODE

► BlackBerry OS 7.1 added a handy feature that benefits everyone. Battery Saving Mode works by monitoring your BlackBerry's battery. When the battery reaches a user-defined threshold, such as 30% remaining, Battery Saving Mode automatically invokes battery saving features, such as dimming the screen or turning off the screen sooner than usual.

To enable this handy feature, select Options, Devices, and Battery Saving Mode. Tap to toggle between disable and enable.

## CREATE MESSAGE FILTERS

► Creating custom email filters is a good way to take control over the emails that show up on your BlackBerry. To use filters, scroll to and select Messages from the Home screen, press the Menu button and select Options, scroll to and select Email Filters. Press the Menu button and then select New. From this menu, you can name the filter at the top of the screen, and block or allow messages by specific senders, from certain email addresses, with a given subject; messages sent directly to you; carbon copy and blind carbon copy messages; and any message with a given importance or sensitivity. For example, you can block messages from Aunt Millie from crossing over to your BlackBerry by moving the cursor into the From field, pressing the trackball/pad, choosing Select Name, scrolling to and selecting Millie's email address from among your contacts, and then setting the Action at the bottom of the screen to Do Not Forward.



Create email filters to cut down on unwanted messages.

## SAVE POWER OVERNIGHT

► If you use your BlackBerry primarily for work purposes, it's a good idea to set your BlackBerry to shut off overnight and start up automatically the next morning. To do this, scroll to and select Options from the Home screen, Auto On/Off, enable the Weekday and/or Weekend options, and then set a schedule under the appropriate heading.

If you use your BlackBerry primarily for work purposes, it's a good idea to set your BlackBerry to **shut off overnight** and start up automatically the next morning.

ANDROID

### TURN OFF ENERGY WASTERS

► If you're not getting the kind of battery run-time you expected, it may not be the battery's fault. We often jump to the conclusion that our phone battery is dying and needs to be replaced, but today's batteries are very robust and usually have a very long lifetime.

Before you run out and buy a new battery, take the time to determine how much energy your apps and various phone features are using. You may be surprised at what you find.

You don't have to be a super sleuth to dig up this information; in fact, the capability is built into your Android phone. From the Home page, navigate to Settings. Select About Phone and tap Battery Use. You'll see a list of all of the apps and background features that are running on your phone. Even better, the list is organized in descending order, from the apps or features that use the most amount of juice to the ones that use the least.

The display will likely be the first item listed. You can ignore it, because you're actively using the system, so the display is turned on and is as bright as possible. Make sure the rest of the items listed are things you want to have activated and running. Not using Wi-Fi? Turn it off. Have apps running that you rarely use? Disable or delete them. Once you prune unnecessary items, your battery may seem like it's brand new again.

### DO AWAY WITH PERFORMANCE-SAPPING SYNCING

► All Android phones have Google services loaded and enabled by default. For most of us, this is a good thing, but if performance seems to be taking a hit, or you're having higher than expected data charges, it may be because there's too much data sync activity between your phone and Google's cloud.

One way to trim this usage is to turn off syncing for services you don't use, or for which you don't need up-to-the-minute data freshness. Open the Settings app. Scroll, if needed, until you see the list of services that are set up for syncing; these include Google+, Gmail, Calendars, and Contacts. Remove the check mark if you don't use a service, or don't need it to be synced automatically.

### CHECK BATTERY LEVEL & OPTIMIZE BATTERY LIFE

► For most smartphones, the default battery indicator doesn't provide much more information than a general idea of how much life the smartphone has left. But for those who would like to see a little more battery data or even analyze just how much battery life individual applications are eating up, Android provides a way. Go to Settings, Device, and then Battery. This menu will not only show you how much battery life remains, but also the amount of battery life each app is consuming. This information should give you a solid foundation for where to cut down on power hogging apps. For instance, if you leave your Bluetooth or GPS features turned on 100% of the time, it's going to drain your battery much faster than if you only turn them on when you need them. You should also consider connecting to a Wi-Fi network when possible, but not leaving the feature turned on when you're out of Wi-Fi range. Also try dimming the brightness of your display.

### KEEP UNWANTED APPS OFF THE HOME SCREEN

► By default, when you install an app, it automatically adds a shortcut to your home screen. That's handy for many of us, because it provides easy access to our apps. But if you're a power user, or you have tons of apps installed, you may not want your home screen to get cluttered, or to be automatically re-arranged.

To turn off the auto-add feature, launch the Google Play store. Tap Menu, Settings, and uncheck the Auto-Add Widgets option.

---

You can keep app shortcuts from cluttering up your home screen in Android by unchecking the **Auto-Add Widgets** option.

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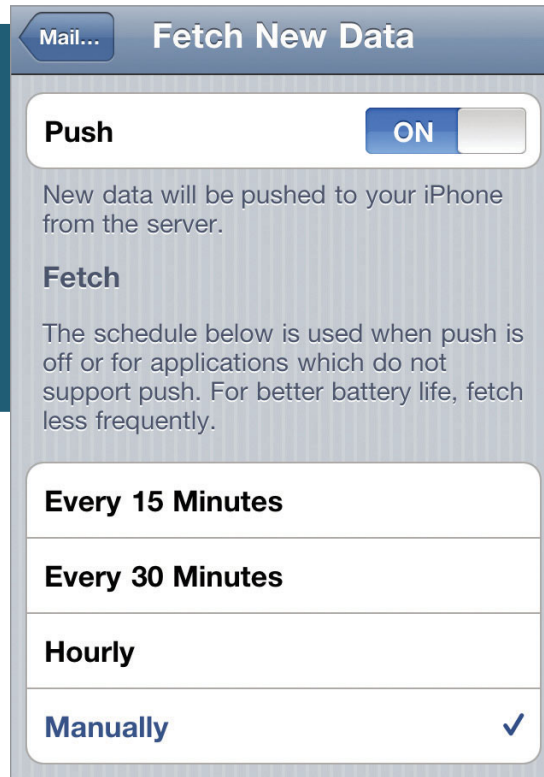
## DIM YOUR SCREEN FOR LONGER BATTERY LIFE

► You may have noticed that your iPhone's default screen brightness is, well, bright. It's so bright you could probably use it as an emergency light the next time the power goes out. But if you're going to use it in an emergency (or for anything else), it must have battery power, and that bright screen is sucking your battery dry.

To reduce screen brightness and extend battery run-time, tap Settings and Brightness. Set Auto-Brightness to Off and use the slider to lower screen brightness.

## AUTO-LOCK TO SAVE BATTERY LIFE

► To maintain a longer battery life per charge on your iPhone, lock the phone when not in use by pressing the physical lock button on the top right corner of the device. You might think it would help to power off the phone every time you don't need it, but the startup process is particularly taxing on the battery. It's typically best to auto-lock the device. To do this, tap Settings, General, and Auto-Lock, and specify the amount of time you want to lapse before your iPhone automatically locks itself.



Disable  
Push to  
lighten your  
battery's  
burden.

## CHANGE MAIL SETTINGS, MAKE YOUR BATTERY LAST LONGER

► By default, your iPhone's Mail accounts are set to push notifications, so you get a heads up the instant an email arrives. But to save your battery you might want to fetch at intervals of your choosing. Access Settings; tap Mail, Contacts, Calendars, and Fetch New Data; and move the slider adjacent to Push to Off. Now you can use the interval settings below to deliver mail less frequently. Bumping your mail fetch setting to Hourly will help a bit, but fetching data manually can mean even greater battery savings. To fetch new data manually, tap Manually from the Fetch New Data screen. (Note that this disables the Find My iPhone feature.)

If you're not inclined to fetch less often, then consider limiting the email accounts that your iPhone checks. To turn off an email account, access Settings; tap Mail, Contacts, and Calendars; select an email account; and then set the account to Off. You can also delete an account by accessing Settings; tapping Mail, Contacts, and Calendars; selecting the unnecessary email account; and tapping Delete Account.

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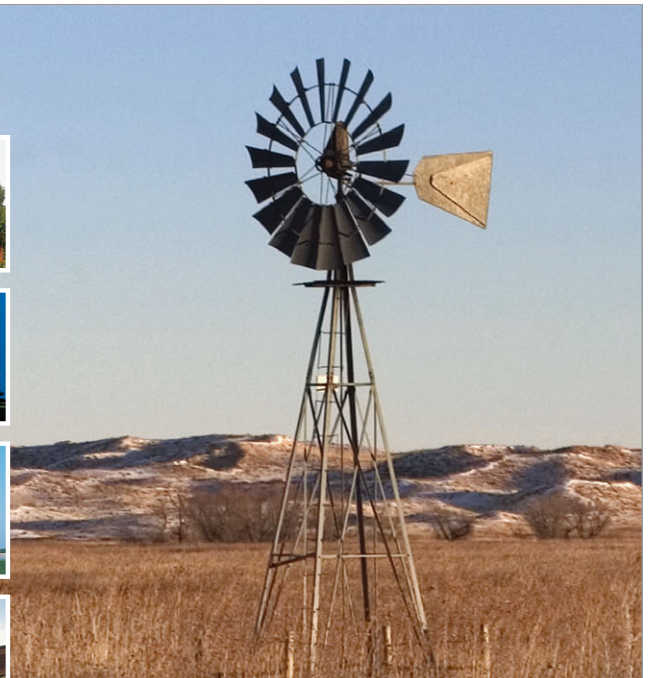
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# Video Formats

## A Quick Guide

ALTHOUGH IT WOULD greatly simplify matters if every smartphone, tablet, and portable media player handled the same types of video files, they don't. That's because video files are created, stored, and transferred using different means. Thus, while one smartphone may play MPEG-4 or H.264 video just fine, it may not support the playback of a 3GPP2 video file. Arguably, the easiest way to determine exactly which video formats a specific device will play is to simply check the device's specifications. This information is nearly always available on the device manufacturer's website, as well as within the device's user manual and on the product box.

We will cover the details about some of the most common video formats that mobile devices currently support and explain how video file can vary in size and quality. First, let's take a look at how video files are stored and played.

### CONTAINERS VS. CODECS

One of the most confusing aspects concerning video files involves understanding codecs, containers, and the difference between the two. Where video files are concerned, a codec is a program that compresses and decompresses video data; the term itself is a portmanteau of "compressor" and "decompressor." To accomplish these tasks, codecs use algorithms. Codecs are also often described as the equivalent of a set of instructions in the sense that a codec dictates to a device how it should go about playing a media file.

A codec compresses a video stream in order to reduce the size for the more convenient storage and transfer of the video. Most codecs use a "lossy" approach for compression, meaning certain data is omitted during the compression process. Although this process typically reduces a video's overall quality, not doing so would result in video files that consume a considerable amount of storage space and are inconvenient for sharing. To play back a video file, whether on a computer or mobile device,

A codecs compresses a video stream in order to reduce the size for the more convenient storage and transfer of the video. Most codecs use a "lossy" approach for compression, meaning certain data is omitted during the compression process.

a codec again uses algorithms to decompress the video data. Beyond there being numerous types of codecs—including H.264, Cinepak, DivX, and MPEG-4, to name a few—codecs differ in quality.

A container (also referred to as a wrapper), meanwhile, essentially does what its name suggests. In short, a container serves as the packaging that holds the various components that make up a video, including the video stream, audio tracks, menus, subtitles, etc. A container can also hold numerous types of codecs, including audio and video codecs various devices need to play the video file. Common container types include AVI, MKV, MP4, and OGG. In general, think of a container as a grocery bag that holds various types of groceries.

Typically, computer systems and multimedia programs come with a host of codecs that support the playback of popular file formats, although in some cases playing a certain file may require the installation of a specific codec. Also noteworthy is that to play a particular video file, a device or

video format, a device from another manufacturer may not.

The easiest method to check which formats your device supports is referencing the device's specifications on the manufacturer's website. The following are a few common video types.

**3GPP and 3GPP2.** The 3GPP (or 3GP) and 3GPP2 (or 3GP2) multimedia container formats are commonly used by 3G-based mobile devices. The 3rd Generation Partnership Project developed the formats.

**AVI (Audio Video Interleave).** Created in the early 1990s by Microsoft, AVI is a widely supported container format that holds audio and video data, including video encoded by different codecs. This means that although a device may support AVI files, it may not support the codec contained within that particular file, leading to incompatibilities. Compared to other popular formats, AVI uses less compression, therefore producing larger files.

**H.264.** Also referred to as MPEG-4 (Moving Picture Experts Group-4) or AVC (Advanced Video

than other video codecs but with better quality.

**MOV (movie).** Developed by Apple, the commonly used MOV container format is used for video and other digital multimedia content. QuickTime movies use the .MOV file extension.

**MPEG-4 Part 14.** This container format holds various types of multimedia data, including audio and video. MPEG-4 Part 14 files, which use the .MP4 file extension, are frequently used for videos shared via the Internet.

**WebM.** Developed by On2 Technologies, which Google acquired in 2010, WebM is a royalty-free, open-source container format that contains the VP8 codec for video streams and the Vorbis codec for audio streams. Sometimes described as "built for Web," numerous Web browsers and media players support the WebM format.

**WMV (Windows Media Video).** The WMV compression file format for video is based on various proprietary codecs from Microsoft. The history of WMV files goes back to the early days of Internet streaming.

## A NOTE ABOUT BIT RATES & QUALITY

"Bit rate" refers to how much data is delivered over a set time limit and is measured in bps (bits per second). There is a bit rate associated with any given media file. In terms of video, the bit rate encompasses the video, audio, and components of the file being delivered. Overall, a higher bit rate indicates better quality. For example, a video with an 8Mbps (megabits per second) bit rate will offer better quality than one with a 2Mbps bit rate. Also worth noting is that the codec used to encode and compress a video file plays a role in quality. Thus, two videos of the same resolution with an 8Mbps bit rate could have differing quality due to different codecs being used. ●

Typically, computer systems and multimedia programs come with a host of codecs that support the playback of popular file formats, although in some cases playing a certain file may require the installation of a specific codec.

application must support the container and codec in question. Thus, a device might support a codec wrapped within a container but not support the container, leaving it unable to play the file.

## COMMON VIDEO FILE TYPES

As mentioned, while one manufacturer's device may support one

Coding), the H.264 video codec is often incorrectly misidentified as an MP4 file. In fact, MP4 is a container format that typically holds H.264-encoded video and AAC (Advanced Audio Coding)-encoded audio. Many other container formats also support H.264. In general, the extremely popular H.264 codec is regarded as producing lower file sizes

# DIGITAL *Diversions*

The Latest Premium Electronics



## BARNES & NOBLE NOOK HD+

► “Light.” “Sleek.” “Fantastic value.” Those are just a few of the superlatives that reviewers have attached to the roughly 1.13-pound Nook HD+ ([www.barnesandnoble.com](http://www.barnesandnoble.com)). For just \$269 (16GB) or \$299 (32GB), the Nook HD+ supplies a 9-inch screen that supports full 1080p HD video. B&N’s new Nook Video service, meanwhile, offers up SD and HD content for rental or purchase (HD video streaming supported) from the likes of Disney, HBO, Sony Pictures, STARZ, Viacom, and Warner Bros. Of course, the HD+ also grants access to books, magazines, and newspapers—more than 3 million, in fact—including via integrated Wi-Fi.



## SOLO VINTAGE 15.6" LEATHER SLEEVE

► Solo ([solo.net](http://solo.net)) professes to proudly design bags suited for “serious professionals who make things happen.” By the looks of the Solo Vintage 15.6-inch Leather Sleeve (\$59.99; model VTA121), the company means it. Wrapped in a fetching espresso-colored leather exterior with a built-in pocket to hold folders and other accessories, the Leather Sleeve (15.2 x 10.4 x 1.7 inches; HxDxW) holds notebooks (15.6-inches and smaller) in its soft-lined, padded interior. Simultaneously attractive and functional, the Leather Sleeve is an apt member of Solo’s Vintage Collection, which is “inspired by the past yet perfect for today.”



## ACER TRAVELMATE B113 NOTEBOOK SERIES

► Sometimes, good things do come in small packages. Take Acer’s TravelMate B113 (\$399; [us.acer.com](http://us.acer.com)), for example. Measuring a briefcase-friendly 1-inch thin and weighing just 3 pounds, the ultraportable B113 manages to provide the basics and then some, including a 11.6-inch Acer ComfyView LCD LED anti-glare display (1,366 x 768), plenty of storage (up to 500GB), multiple connectivity options (Bluetooth, Wi-Fi, and Gigabit Ethernet), and everything needed for high-quality videoconferencing (Acer Video Conference HD Web cam and built-in mic). Elsewhere, Acer’s ProShield Manager suite of security and management tools and Backup and eRecovery Manager applications safeguard data.



### ASUS ASUSPRO SERIES BU400 ULTRABOOK

► Enhanced security and better management are but two of the many business-focused positives that the 14-inch BU400 Ultrabook ([www.asus.com](http://www.asus.com); pricing to come) has on tap. Asus created the lightweight (1.64kg) and thin (20mm) BU400 for enterprise, organizational, and government buyers and states it's one of the first business-specific ultrabooks on the market. Beyond sporting a carbon-reinforced frame and spill-resistant keyboard, Asus certifies the BU400 to meet "much higher standards" than mainstream notebooks by passing it through hinge strength, drop resistance, shock resistance, and other reliability tests. A touchscreen version of the BU400 is due out soon.



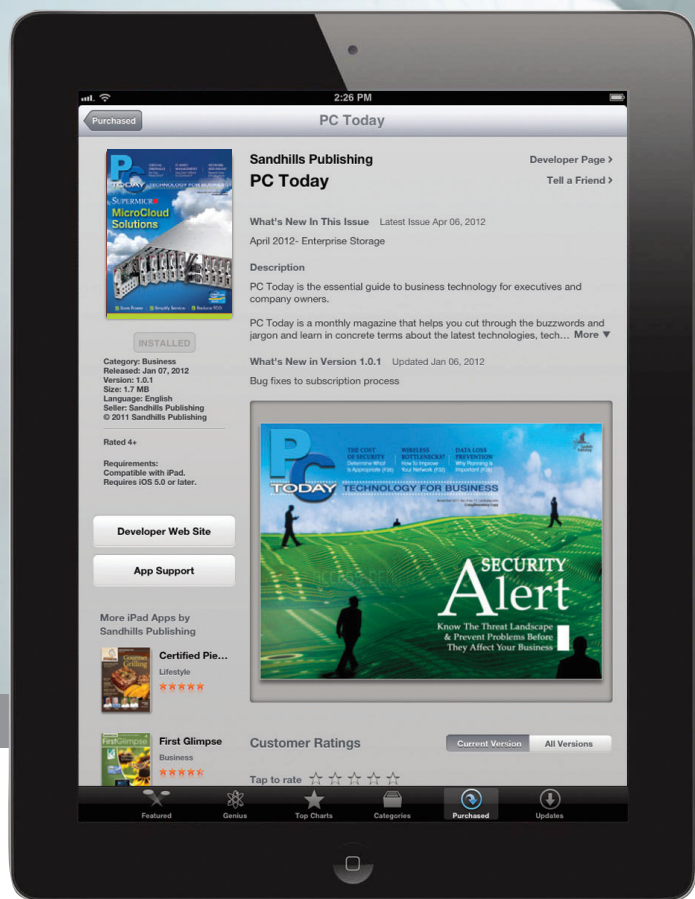
### SONY EXTRA BASS HEADPHONE SERIES

► If you appreciate hearing the bass come through in your music, Sony ([store.sony.com](http://store.sony.com)) has the headphones for you. The new Extra Bass lineup comes in headband and earbud varieties, with both styles billed as delivering deeper harmonics suitable for "enhancing the signature of today's music styles." Models include the headband-styled MDR-XB800 (\$149.99), MDR-XB600 (\$99.99), and MDR-XB400 (\$59.99) and the MDR-XB60EX (\$99.99) earbuds. The MDR-XB60EX sports oversized 13.5mm drivers and rely on what Sony states is engineering designed to deliver exceptional bass response and high-level noise isolation. All models feature new "Advanced Direct Vibe Structure" that aims to deliver "rich bass ideal for all popular music genres."



### EPSON CONNECT MOBILE PRINTING SOLUTIONS

► Increasingly, users are taking more photos and printing more documents with their smartphones and tablets. To make sharing and working with photos and documents more convenient, Epson provides a free suite of mobile tools called Epson Connect. These tools enable users to send photos and documents via email from anywhere to a compatible Epson ([www.epson.com](http://www.epson.com)) printer, such as the Epson Expression Premium XP-800 Small-In-One (\$279.99), which happens to possess its own email address and will automatically print photos and documents. Users can also send photos from computers or notebooks via Remote Print software, use an iPrint App to print and scan documents, and use a Scan To Cloud tool to scan and share documents and photos with a printer and then email them from the printer.



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# Office In The Cloud

## LEVERAGE THE WEB

JUST AS THERE ARE NOW virtual or cloud-based versions of software and storage solutions that used to be firmly entrenched in physical servers and desktops, there are now Web versions of Microsoft's widely used Office products. Word, Excel, and other Office programs are now included in a hosted service called Office 365 ([office365.microsoft.com](http://office365.microsoft.com)). But as familiar as you may be with the functionality of traditional Office products, there are plenty of new capabilities, features, and collaborative possibilities to explore in the Web-based version. We offer some practical tips and how-to steps to

help you advance from novice to experienced Office 365 users.

### ► CUSTOMIZE YOUR PUBLIC WEBSITE

If your company uses SharePoint Online, you can update or add pages to your Public Website whether you're in the office or on the road. Click the Page tab and select Edit to start making changes to an existing page—say, to add new information and photos for a new product, update a schedule, or post to a blog. Use the Page tab to change layouts, the Insert tab to add content, or the Format Text tab to work with text. Or click the Page tab and

select New to create an entirely new page for the Public Website.

### ► CREATE PERSONAL & TEAM WEBSITES

When you become an Office 365 user, you can activate a My Site website where you can manage and share docs hosted by SharePoint Online. A similar feature exists for team project management in the Team Site, where you can create a Team Site for syncing calendars, developing projects, and working offline. To start a team-accessible home base site in SharePoint, go to the Site Actions menu, choose New Site, and then click the Featured Items or Browse

All tab. Assign your team site a URL and title and click Create.

### ► ADD SHARED & PRIVATE NOTES DURING A LYNC MEETING

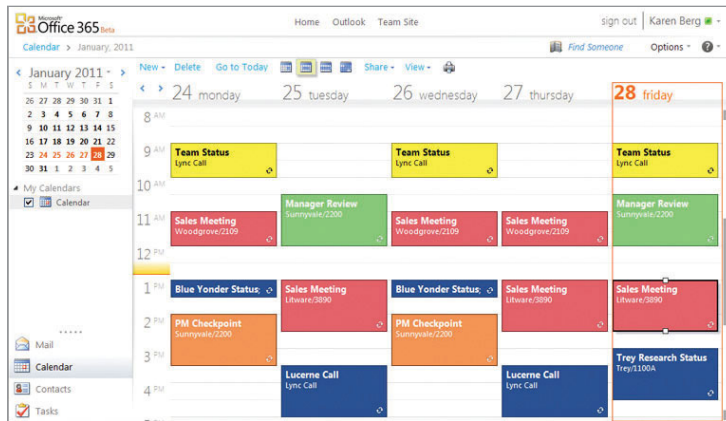
Many times the records, lists, and important items you save in OneNote (Microsoft's digital note-taking software) turn into meeting agendas and tasks for colleagues, so it's convenient that Lync lets you save private notes or share notes for collaborative discussions. To start a note during an in-session Lync meeting, click the OneNote tab in the conversations window after you pause the presentation. Then select My Notes to start typing private notes or click Share Notes and choose a section for note-taking.

### ► SHARE A PRESENTATION

Lync not only lets you share your Desktop, a program window, a whiteboard, or a poll, but you also can share your PowerPoint presentations. When you start an IM (instant message) conversation, click the Share drop-down menu and select the PowerPoint Presentation option. After the presentation uploads, you can enable restrictions, such as who can enter the presentation, who presents, and who is allowed to annotate the presentation.

### ► SEND DOCUMENTS VIA INSTANT MESSAGE

There are two ways to send a document as an attachment using Lync: from the document itself or through an open IM window. Within the document you intend to send, click File, click Save & Send, and then select Send By Instant Message. In the Address Book window, add the recipient names in the To field and make sure you can see the attachment in the IM window. Alternatively, you can start an IM conversation with a recipient, click the paper clip icon (for sending attachments), choose a file, click Open, select the item you intend to share, and send.



There are plenty of helpful features built into Office 365 to help you stay organized. For example, you can customize your Outlook calendar Web app as you plan meetings and work toward deadlines.

### ► EDIT OR VIEW DOCS IN REAL TIME

Another advantage of SharePoint is the ability for multiple users to work in the same documents simultaneously. To access a document that's available for team editing, find the document link in your SharePoint website's document library, hover over and click the arrow (if you're asked to select Ready Only or Edit), and choose View In Browser or Edit In Browser. Accessing documents in this way requires that the corresponding Microsoft Web App (Word, Excel, PowerPoint, or OneNote) is installed.

### ► SHARE YOUR CALENDAR

Office 365 Outlook includes calendar sharing options that let you select a contact or group of people who may access your schedule. You can do so by entering the Calendar view, clicking Share, and choosing Share This Calendar. Next, insert the individual or group who will receive the shared calendar.

### ► STAY IN TOUCH WITH COLLEAGUES VIA MOBILE APP

If your company uses Microsoft Lync, try the mobile app when you're away from the office. The Lync app is available for a variety of mobile platforms and provides you with capabilities similar to those of the desktop version. Log in and start connecting with colleagues directly via IM, or use the app to place calls, start an email message, or participate in a videoconference. As with the

desktop Lync, you can use the app to let others know your present availability, as well.

### ► USE YOUR MOBILE DEVICE TO SHARE DOCS

Microsoft recommends two sharing methods from mobile: sharing with recipients you invite to your site and sharing via a guest link. Both methods may require you to switch from mobile to PC view through the Settings menu. To share with site invitees, tap More in the document library, then tap Share. Next, type the appropriate names or email addresses of those with whom you're sharing the doc. Next, select Can Edit or Can View; check the Require Sign-In box. If you would like to add a message, choose Show Options and tap Send An Email Invitation. If you opt to send a guest link, simply uncheck the Require Sign-In check box.

### ► RECORD COLLABORATION SESSIONS USING LYNC

Lync helps you document current multi-user conversations, calls, and meetings so you can easily reference pivotal conversations. To do this while you're in Lync, direct your pointer to the conversation window and click the More Options menu (two arrows on the right side of the window). Next, click Start Recording. You can access saved records by navigating to the Microsoft Lync Recording Manager. Click Start, select All Programs, and then click Microsoft Lync. Open the Manager and choose your preferred recording. ●



# Solve Notebook-Projector SETUP PROBLEMS

You're ready to give your presentation, but until that first slide appears on the big screen, you can never be sure that your equipment has got your back. We can't tell you not to worry, but these handy tips should help bail you out if your presentation goes south.

## ► HARDWARE & CABLE CONNECTIONS

It can be difficult to track down the source of problems that occur when connecting a notebook and projector. Here are some things to watch for.

**Video.** Turn off all equipment and connect your notebook's video out port to the projector. The usual connection

choices for a notebook are VGA (Video Graphics Array), DVI (Digital Visual Interface), HDMI (HD Multimedia Interface), and DisplayPort. Many projectors have VGA and one or more digital connections. If possible, use a digital connection for high quality.

**Sound.** Some HDMI and DisplayPort digital video connections can carry audio through the same port, but both notebook and projector must support audio over the digital video connection. Traditionally, audio is connected using the notebook's audio out jacks and the projector's audio in ports; both of these are often RCA or 3.5mm. If you're not using the projector's built-in speakers, make

sure you connect your notebook's audio out to the sound system you intend to use and turn the volume down on the projector's speakers.

**Mouse.** If you are using a mouse, or a remote mouse controller, make sure the controller/mouse is connected, usually through the notebook's USB port. If you are using a wireless device, make sure the notebook has the appropriate wireless connection enabled. This is typically Bluetooth or a USB port wireless dongle.

## ► NETWORK CONNECTION

Many venues supply network projectors, which are made available as a shared resource. Making a connection to

## TOP 10 NOTEBOOK-PROJECTOR

### *Troubleshooting Tips*

- 1** Turn off all equipment before connecting the notebook to the projector.
- 2** If possible, use a digital connection to ensure a high-quality presentation.
- 3** If you're not using the projector's built-in speakers, turn them down and connect the notebook's audio out to the sound system.
- 4** If you're using a wireless mouse or controller, make sure you can establish the wireless connection.
- 5** Use the straightforward network connection feature in Win7 to connect to a network projector.
- 6** If there is no video, check all the ports and then check Windows' Screen Resolution settings.
- 7** Out-of-range messages can be solved by adjusting the screen resolution.
- 8** When a projected image isn't proportionally correct, try repositioning the projector and/or changing the projector's keystone setting.
- 9** If a display turns off during a presentation, check the notebook's power management settings.
- 10** If video isn't displaying correctly, change the Display settings to make the projector the primary display.

a network projector is as easy as plugging your notebook into the corporate network via wired or wireless Ethernet. Check with the company's IT staff for specifics. Once connected, use the network connection wizard in Windows 7 to find the projector you wish to use:

- Click Start (the Windows button in the bottom-left corner of the screen).
- Click All Programs.
- Click Accessories.
- Click Connect To A Network Projector.
- The network connection wizard may inform you that your notebook's firewall is blocking the ability to connect with the projector. Click to establish the network connection.
- Either have the wizard search for available network projectors or enter the projector's address manually if it is available.

Once connected, a Network Presentation window will minimize to your Taskbar. When you're ready to make your presentation, open the Network Presentation window and select Resume. Your notebook will treat the network projector like an external monitor.

#### ➤ NO VIDEO

In many cases, your notebook will detect that you have a projector plugged into one of its video outputs and will automatically turn on the port. Not all notebooks do this, however; and even those that do can still have missing video if the notebook isn't set to duplicate the Desktop or extend it to the secondary monitor (the projector). Many notebooks use a function key combination to toggle the projector port on or off and set how you can use the display. We recommend using the control panels in Win7:

- Right-click a blank area on the Desktop.
- Select Screen Resolution.
- Select the second display from the drop-down menu.
- Select Extend These Displays from the Multiple Displays drop-down

menu. Your Desktop background should now appear on the projector.

Win7 also has a pop-up display for selecting the content that is sent to the projector. Press the Windows-P keys to bring up the four possible selections:

- Computer only (turns the projector display off)
- Duplicate (mirrors your computer's Desktop on the projector)
- Extend (uses the projector as an extension of your Desktop)
- Projector only (turns off your notebook's display and uses the projector as the main display)

#### ➤ VIDEO IS OUT OF RANGE

When the projector can't reconcile a video signal from a notebook with its preset resolution, it displays an out-of-range message. To solve this in Win7:

- Right-click a blank area on the Desktop.
- Select Screen Resolution.
- Select the display associated with the projector.
- Use the resolution drop-down menu to adjust the resolution to the correct value. Try 800 x 600 or 1,024 x 768 as these are resolutions that many projectors can handle.

#### ➤ DISPLAY TURNS OFF

If the projector's display turns off during your presentation, check your notebook's power management feature, especially if you're running the notebook off of its battery. Whenever possible, use your AC adapter to run your notebook.

#### ➤ VIDEO WON'T DISPLAY OR IS CHOPPY

Your slide presentation works fine, but when you try to show a video, all you see is a blank window or a choppy rendition of the video. Trying to display a video on two monitors can be too much for a video card that has marginal graphics capabilities. If video isn't displaying correctly, change the Display settings to make the projector the primary display. ●



# Excel Formulas MAKE THEM WORK FOR YOU

EXCEL SPREADSHEETS are useful for tracking finances, storing important figures, or even creating databases of information. But the only way to take full advantage of Excel is to use functions and formulas. Whether you simply want to find the sum total of a column of numbers or you want to calculate compound interest, formulas are the best way to transform your data. Here are some examples of formulas that might save you time.

Excel doesn't have a built-in compound interest function, but you can use this relatively simple function to get the same result.

## ► CALCULATE COMPOUND INTEREST

Because Excel doesn't have a built-in function for calculating compound interest, Microsoft provides a formula that will get you the results you need using present value (PV), interest rate

|   | A                       | B      |
|---|-------------------------|--------|
| 1 | Initial Investment (\$) | 100    |
| 2 | Interest Rate           | 0.04   |
| 3 | Time (In Years)         | 10     |
| 4 |                         |        |
| 5 | Total                   | 148.02 |

(R), and the number of investment periods (N). So, if you make an investment of \$100 and want to see how much money you'll have in 10 years with a 4% interest rate, you can plug those numbers into the  $=PV*(1+R)^N$  formula. In our example, your formula would be  $100*(1+.04)^{10}$ . Note that you need to change the 4% figure into a decimal number, otherwise you might expect larger than life return on your investment. Calculate the formula and you'll see that over 10 years your initial \$100 investment will grow to \$148.02.

## ► CALCULATE PERCENTAGES

You can calculate percentages in a variety of ways using Excel, depending

on the information you already know. For instance, you can use a simple division formula to find a comparison between two numbers. For instance, if you shipped 25 products and only one of them was returned, you can simply enter  $=24/25$  (or use cell coordinates) to get a figure of .96 or 96%. If you want to calculate change between numbers (200 to 250, for example), you can use the formula  $=(250-200)/ABS(200)$  to get a growth rate of .25 or 25%.

### ► SUM OF TOTALS ACROSS MULTIPLE WORKSHEETS

Let's say you keep track of sales figures over the years using the same Excel document. Not only do you want a record of your current year's sales, but you also want your sales figure from the previous year at the top of each sheet. This will require the use of the SUM function as well as some cross-sheet calculation. Using the SUM function,  $=SUM(Sheet1!A1:A6)$  for instance, you can take numbers from the first sheet, add them together, and display them in a cell on the second sheet.

### ► MATCH FUNCTION

Excel's MATCH function makes it easier to find the location of a specific figure relative to its order in a column. For instance, if you are searching for the number 780 in a column of 30 cells, you can type the formula  $=MATCH(780,B1:B30,0)$  to find your exact match. If the information is located

The MATCH function is helpful if you want to find a specific figure in a long column of numbers. It shows you where your query is located in relation to the array you provide in the formula.

|    | A                                                                                                                                                                                                             | B          | C | D |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|---|
| 1  | Product                                                                                                                                                                                                       | # Of Sales |   |   |
| 2  | Desktops                                                                                                                                                                                                      | 267        |   |   |
| 3  | Laptops                                                                                                                                                                                                       | 359        |   |   |
| 4  | Smartphones                                                                                                                                                                                                   | 780        |   |   |
| 5  | Tablets                                                                                                                                                                                                       | 1,898      |   |   |
| 6  | Printers                                                                                                                                                                                                      | 175        |   |   |
| 7  |                                                                                                                                                                                                               |            |   |   |
| 8  |                                                                                                                                                                                                               |            |   |   |
| 9  |                                                                                                                                                                                                               | 3          |   |   |
| 10 | $=MATCH(780, B2:B6,0)$                                                                                                                                                                                        |            |   |   |
| 11 | MATCH(lookup_value, lookup_array, [match_type])                                                                                                                                                               |            |   |   |
| 12 | MATCH(lookup_value, lookup_array, [match_type])<br>Finds the largest value that is less than or equal to lookup_value. Lookup_array must be placed in ascending order.<br>0 - Exact match<br>1 - Greater than |            |   |   |

in the 15th cell, for instance, you'll receive the result of 15 from the formula. You can also use a 1 or -1 modifier in place of the 0 to find the number that is greater than or less than your desired figure.

### ► ROUND UP OR DOWN

If you work with figures that have multiple decimal numbers and need to round up or down to a specific decimal place, then Excel has two easy functions you can use to get the job done: ROUNDUP and ROUNDDOWN. For example, take a number you want to round up, such as 12,345.678 and decide what decimal place you want to round to. Then, use the function  $=ROUNDUP(12,345.678, 2)$  and Excel will automatically round it up to 12,345.68.

### ► WORKDAY FUNCTION

WORKDAY lets you take a start date and a number of days to determine what your end date will be with weekends and holidays taken into account. For example, you need to enter the DATE formula, we'll use  $=DATE(2013,1,3)$  into the

A1 cell, and a specific number of days in the A2 cell, we'll use 18, you can use the formula  $=WORKDAY(A1, A2)$  to find your end date, which in this case is March 27, 2013. You can also add holidays to the formula by entering the dates into cells and adding them to the end of the formula  $=WORKDAY(A1, A2, A3:A9)$ , which will change the end date.

### ► DISPLAY CURRENT DATE & TIME

Excel's NOW function is a quick and easy way to display the current date and time in your spreadsheet. Type  $=NOW()$  into a field and the date and time will appear. This information doesn't update automatically, but rather every time you make a calculation within the spreadsheet as well as every time you open that particular Excel document.

### ► REPT FUNCTION

Typing the same thing over and over can quickly get repetitive, especially if you need 32,767 instances of the same information. If you think that number is oddly specific, you're right. It's the maximum number of times you can use the REPT function, according to Microsoft. To use the REPT function, simply take a word, number, or other entry ("Repeat," in this instance) and tell Excel how many times you want it repeated by typing  $=REPT("Repeat", 5)$  into a cell. You can also use this function to better visualize data. For instance, you can use symbols to represent sales figures or your amount of customers and watch your growth over time. ●

|   | A   | B | C |
|---|-----|---|---|
| 1 | 100 |   |   |
| 2 | 200 |   |   |
| 3 | 300 |   |   |
| 4 | 400 |   |   |
| 5 | 500 |   |   |
| 6 | 600 |   |   |
| 7 |     |   |   |

Cross-sheet calculation makes it possible to link formulas across multiple sheets in the same workbook, so you don't have to copy and paste information or calculate figures outside of Excel.

|   | A                    | B | C |
|---|----------------------|---|---|
| 1 | Total                |   |   |
| 2 | 2100                 |   |   |
| 3 | $=SUM(Sheet1!A1:A6)$ |   |   |
| 4 |                      |   |   |
| 5 |                      |   |   |
| 6 |                      |   |   |



# International Travel

## TIPS FOR USING **MOBILE DEVICES**

AS A SEASONED BUSINESS TRAVELER, you probably know your way around a smartphone or tablet, which can help reduce the stress of your domestic business trips. But touching down in an unfamiliar city on the opposite side of the world can unsettle any road-weathered professional. File away the following international travel tips for your next jaunt.

### ► STOCK UP ON OFFLINE APPS

It goes without saying that the best way to avoid international roaming overages is to not use data. In light of this, it's good to know there's an alternative to cellular bill sticker shock: offline apps. For example, you can use a language

translator app with an offline dictionary to interpret foreign words and phrases. Offline utility apps, such as tip calculators, currency converters, and travel expense trackers will also be indispensable resources when you're not connected to a cellular network.

### ► PACK MUST-HAVE TECH ACCESSORIES

It would be easy to carry an arsenal of tech accessories to make computing on the road more comfortable, yet minimalism is of the utmost value when you have to stash two weeks' worth of clothes in a large carry-on. Aside from the necessary charging cables, add-ons such as a Bluetooth headset and a wireless

keyboard (or one that's embedded in a case) won't take up much space. If you're making sales calls while abroad, consider bringing a credit card payment swipe attachment, which is both space-saving and handy for quick transactions.

### ► PROTECT YOUR DEVICE

Investing in an armor-like case for your tablet or smartphone will help your device go far in terms of both distance and longevity. Not only should the front and back of your device sport clear skins (full-body shields are available, as well) to prevent scratches, but a durable case should also protect its body. Some of the best cases are waterproof, dust-proof, and crush-proof, making them

worthy of your international excursions. Equally as important is mobile antivirus software: You can download an anti-virus app and keep your data and mobile browsing secure.

### ► DATA USAGE

Two stressors that no traveler with a mobile device wants to experience: no available data service and unexpected roaming charges. Select carriers and manufacturers are lightening this burden, however, so contact your carrier before you travel. Verify whether your current phone model will work in foreign countries; some carriers also provide an interactive travel planning tool. Global data rates may differ from voice and messaging rates, so be sure to nail down what type of global roaming fees you might incur.

### ► THE RIGHT APPS

Add the following item to the many to-dos on your travel prep list: download travel planning apps. There are plenty of apps that take care of previously time-consuming tasks. You can use a travel organization app to coordinate your itinerary, keep track of hotel vouchers, and locate your destinations. You may want to consider using a separate flight tracking app to prioritize your flight departures. Similarly, there are myriad city-specific public transportation apps that guide you around unfamiliar bus routes and metro stops.

### ► EXTERNAL BATTERY PACK

International travel can place a high demand on your smartphone's battery, especially if you're riding in taxis, checking your GPS app constantly, and using data throughout the day. One way to prevent battery depletion is to connect a portable battery pack to your smartphone. Certain external packs are capable of charging additional mobile devices, as well.

### ► MINIMIZE DATA USE

You don't have to let your device control when you receive emails, messages, and other notifications; instead, you can



A simple way to protect the data on your device is to activate a passcode. For instance, you can set up a passcode on your iOS device by tapping Settings, General, and Passcode Lock, and typing a strong 4-digit code. The password will appear when you turn on, wake, and unlock the device.

adjust phone or tablet settings to see what you want, when you want it. For example, instead of letting your phone automatically push emails to your device from the mail server, you can set them to fetch, so you can manually retrieve them at an appropriate time. You can also restrict device data by turning off your cellular connection. To cut off all wireless transmissions—cellular (voice, data, and location services), Wi-Fi, Bluetooth, and GPS—simply switch your device in-flight mode.

### ► THREE INDISPENSABLE WI-FI HOTSPOT TIPS

You have doubtless heard about how snoops can potentially employ sniffers to grab passwords and other data as it travels over unsecure Wi-Fi hotspots, but hotspots can be indispensable on business trips. If you need wireless Internet access, keep in mind these three safety tips: Choose clearly marked, reputable hotspots to avoid fake ones; use encrypted websites whenever possible (type "https" instead of "http" at the beginning of a Web service URL); and create temporary Web service accounts (e.g., for email or document sharing)

before your trip and, when your trip is done, download the information you need to keep and delete the accounts.

### ► BACK UP CRITICAL DATA

Perhaps you typically perform a backup of your mobile device before leaving for a trip. Take some time to find out what is included in your backup and pursue more comprehensive backup capabilities if necessary. Sync software will back up some combination of device settings, apps, app data, and files, but not necessarily all of those things. You may need to adjust sync settings or install a better backup app.

### ► IN CASE OF LOSS OR THEFT

Not unlike the experience of losing your passport, the loss or theft of a smartphone or tablet can bring your travels to a standstill. Don't become a victim in this situation. Instead, activate any included remote device-finding settings or download a lost and found app on your mobile device. Various apps let you create a custom message for your lock screen, locate your device via GPS, or perform a remote lockdown or wipe. ●



# STAY AHEAD OF THE CURVE

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